D1.38/2:3/4

Defense Management Journal

DOD COST REDUCTION AND MANAGEMENT IMPROVEMENT PROGRAM

UNIVERSITY OF FLORIDA
DEC 1967

DOCUMENTS DEPT.
DEC 1967
UNIV. OF FLORIDA LIBRARY

UNIV. OF FLORIDA LIBS.
DOCUMENTS
DEPARTMENT
U.S. DEPOSITORY

Volume III, Issue No. 4 FALL - 1967

CHANGE IN PUBLICATION'S NAME

Effective this issue—The Cost Reduction Journal becomes The Defense Management Journal. The new title reflects more adequately the broadened program responsibilities described on pages 8 through 11 of this issue.

ARTICLES

Page

Project One Hundred Thousand 3
STANLEY R. RESOR

Upgrading Logistics Systems 9
THOMAS D. MORRIS

Value Engineering in Program Management 13
JAMES FERGUSON

Construction in South Vietnam 17
D. A. RAYMOND

Navy MK 4 Gun Pod Program 26
ROBERT L. TOWNSEND

Truth in Negotiations 33
MAURICE L. PARADIS

The TELPAK Story 38
RENATO TRAMONTANO

How Agriculture Stretches Defense Dollars 51
HAMILTON LAUDANI

FEATURES

The Vietnam Construction Program—Report of a Congressional Subcommittee 22

White House Awards Ceremony 28

Notes From the Director's Desk 43

Savings Summary (FY 1967) 45

Seasoned Incentives 46

REPRINTS

A Broader Management Improvement Program—A SecDef Memo 8

FY 1967 Cost Reduction Achievements—Presidential Remarks 32

Cover photo—Cost reducers of all ages turn up at the White House for a Cost Reduction Awards Ceremony.

See page 29

Defense Management Journal

(formerly Cost Reduction Journal)

Published by the Directorate for Cost Reduction and Management Improvement Policy, Office of the Assistant Secretary of Defense (Installations and Logistics).

Honorable THOMAS D. MORRIS
Assistant Secretary of Defense
(Installations & Logistics)

Mr. PAUL H. RILEY
Deputy Assistant Secretary of Defense
(Supply and Services)

Mr. HARRELL B. ALTIZER
Director for Cost Reduction Policy

Editor .... **EDWARD E. OPPENHEIM**
Associate Editor .... **JAMES E. McCANNELL**
Art Director .... **ALEX DELLA-VALLE**

Contributing Editors

Army (Raymond C. Chase, Jr.) OX 7–8487 (ac 202)
Room 1D569, Pentagon, Washington, D.C.

Navy (Oliver G. Green) OX 6–4393 (ac 202)
Room H–116, Main Navy Building, Washington, D.C.

Air Force (S. M. Funk) OX 7–6034 (ac 202)
Room 4E269, Pentagon, Washington, D.C.

DSA (L. M. Sundquist) OX 8–1176 (ac 202)
Room 3C390, Cameron Station, Washington, D.C.

The Defense Management Journal is published quarterly by the Directorate for Cost Reduction and Management Improvement Policy, Office of the Assistant Secretary for Defense (Installations and Logistics), for distribution within the Department of Defense.

The Defense Management Journal seeks to stimulate cost reduction ideas, promote cost consciousness, and enhance understanding of efficiency programs. The Journal's content includes: (1) cost reduction goals and accomplishments; (2) policies and procedures of the cost reduction system; (3) cost reduction techniques and processes in all functional areas from which savings are derived; (4) new developments in concepts and philosophy that affect cost reduction objectives; and (5) specific cost reduction examples, with attribution where appropriate.

Unless otherwise indicated, Journal material may be reprinted provided: (1) credit is given to the Journal and the author; and (2) a single copy of the reprint is forwarded to the Journal.

Inquiries dealing with the Journal's policy and content may be directed to: Editor, Defense Management Journal, Room 2B322, Pentagon, Washington, D.C. 20301.

The Journal is available on subscription from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402, $1.25 a year domestic, 25 cents additional for foreign mailing. Single copy 35 cents.

EDITORIAL

Keeping a Sense of Proportion About . . .

OVERCHARGES ON SMALL PURCHASES

***By* JOHN M. MALLOY**
Deputy Assistant Secretary of Defense (Procurement)

THE FEW purchases that go wrong each year tend to obscure the 15 million that go right. This is not surprising. It is hardly news when purchases are handled well—even when they aggregate a staggering $44.6 billion, as they did last year for Defense.

Since everyone expects our purchases to be closely priced, it is always something of a sensation when investigation discloses any instance where we have been flagrantly overcharged.

The considerable publicity that invariably attends these few disclosures could create the impression that overcharging is widespread, that our purchasing officers lack judgment, and that our purchase procedures are full of holes.

None of these inferences are supported by facts.

The fact is that only an exceedingly small fraction of 1 percent of all of our procurements has been identified as questionable. It is indeed the rare exception when the Government grossly overpays for what it buys.

As everyone of our 25,000 professional procurement people knows, each large purchase receives numerous reviews (at increasingly higher levels depending on dollar value) before a contract is awarded. However, small purchases ($2.500 and under) are not subjected to quite the same intense scrutiny for obvious reasons. Competition, value analysis, and other good buying practices assure that the Government gets a good "deal" in almost all instances.

In perspective, the opportunities simply do not exist for widespread overcharging.

Second, our procurement people are tops. Civil Service standards assure their competence. Investigatory agencies check their integrity. The nature of the positions they hold and the work they perform for the defense of the Nation encourages the strongest dedication. No organization in the world—public or private—possesses a more scrupulous, a more dedicated, or more knowledgeable purchasing talent.

Not long ago we thoroughly investigated our small purchase procedures including a handful of overcharges brought to our attention. In no case did we find any deliberate act of malperformance on the part of our personnel. What we did find were many, many examples of imagination and initiative to protect the Government's interest.

Finally, our small purchase system reflects the best know-how we have for obtaining low value supplies at minimum administrative cost. This does not mean that the system cannot be improved. It can be—and constantly is.

There are several things, however, we should not do:

- We should not give the $250 purchase (the average small purchase is $231) the same precontract review we give the $2 million purchase.
- We should not hire 10,000 more people to research the best possible source for each of the millions of spare parts we buy annually. The cost simply is not worth the return.
- We should not handle urgent Vietnam orders at a more deliberate pace.
- We should not buy large quantities of items whose future use is highly problematical simply to obtain a lower production quantity price per item.

There are, however, certain things we can do:

- We can require buyers to more clearly document the data that establishes the reasonableness of the price.
- We can tighten up the supervision that more experienced buyers give the individual junior buyer.
- We can devise a better system for identifying the original source of each part of an end item.
- We can develop better methods of describing the item to be purchased to assist the buyer.
- We can augment the traveling teams that hold training courses for junior buyers and we can devote more time to on-the-job training.
- We can try to stem our attrition rate of 50% among buyers every three years by improving the grade structure.
- We can intensify our review of companies that specialize in selling spare parts so as to identify irrational pricing patterns.

UNIVERSITY OF FLORIDA LIBRARIES
DOCUMENTS DEPT.
DEC
1967

No one—anywhere—exercises 100 percent perfect judgment 100 percent of the time and no procurement system—at any point in time—is ever 100 percent perfect. But we who are in the business of spending public funds have an obligation to constantly try for perfection even though the occasional headline blurs the real picture.

THE COMMAND CHANGETH

The observant reader will note a different name in the topmost position on the *Journal's* masthead. The name changed when Paul R. Ignatius became 59th Secretary of the Navy and Thomas D. Morris returned to the fold as the 6th Assistant Secretary of Defense in charge of logistics.

These reassignments were well reported in the daily press—and a rehash of that coverage would serve no useful purpose here.

However, the *Journal* does have some unique knowledge that speaks volumes about the kind of men they are.

Mr. Ignatius habitually squeezed precious minutes from the problem-packed hours of his rushed workday to drop a commendatory line or two to some member of his staff.

One such informal note that came our way said that our magazine "was a real pleasure to look at."

We were gratified, of course, to receive this praise from a Phi Beta Kappa graduate of the University of Southern California, the holder of an M.B.A. from Harvard, a former business school instructor, a founder of a research and consulting firm (Harbridge House), and an expert in military supply and procurement.

Gratification aside, the real gist of this story is in our reply which said:

"Thank you for your note commending the *Journal.* No Government periodical becomes top-notch without strong backing and broad-gage understanding throughout the management channels it must clear to survive and grow. We know the *Journal* enjoys that kind of support from you, and we appreciate it."

In retrospect, we have no doubt that the thought expressed in our note could have been communicated just as appropriately and sincerely by any member of the I&L staff—with reference to his program substituted for reference to the *Journal.* Secretary Ignatius is that kind of a guy.

The *Journal* has had some acquaintance with Mr. Ignatius' successor in OSD. Thomas D. Morris, the new ASD (I&L), gave the *Journal* its first bylined article (Spring 1966). He also gave the Cost Reduction Program its first mass communications medium (Cost Reduction Newsletters, 1963–66). As a matter of fact, we seem to recollect that he gave the Defense Department its first fully developed Cost Reduction Program.

When Thomas D. Morris stepped out of the ASD (I&L) position in December 1964, Secretary McNamara cited his many, many innovative contributions to Defense management and capped that summary with the following statement:

"Perhaps his greatest achievement is his contribution to the development and implementation of the Department of Defense Cost Reduction Program, which has become a vital tool in the management of Defense resources and a model for administrators everywhere.

"Mr. Morris has earned the lasting gratitude of all Americans for these remarkable attainments. His public service will stand as an inspiring example of patriotism and civic responsibility."

To which the *Journal* can only add, "Amen"—and "welcome back."

A PERSPECTIVE ABOUT PERSPECTIVE

Some readers claim that preoccupation with cost reduction warps the *Journal's* perspective. As evidence, they point out that the *Journal's* sole comment on Miss U.S.A.'s visit to a cost reduction exhibit dealt only with her eloquence on behalf of U.S. Savings Bonds. These same critics assert that the *Journal* would plead materials conservation as the best justification for miniskirts.

This criticism bruises no editorial feelings. We plead guilty while offering—in mitigation—the thesis that healthy dedication to a righteous cause has a sometime tendency to distort vision.

And we did glory in our dedication to the cause of economy and efficiency—as much, we thought, as any partisan publication could.

So it was with a touch of contrition and a smidgeon of envy that we discovered a publication more wrapped up in its cause than we were in ours.

The discovery occurred quite by chance. We were dabbling in the literature of innovation when our scholarly eye hit upon the fascinating title: *A Model of The Innovative Process (as viewed from a non-science based fragmented industry)*. The author's opening paragraph follows.

"Points of view make a very great difference, as was dramatically brought home to me when I read a review of *Lady Chatterley's Lover* that appeared in *Field and Stream* magazine. It says in part:

> 'This fictional account of the day-to-day life of an English gamekeeper is of considerable interest to outdoor-minded readers, as it contains many passages on pheasant raising, on apprehending of poachers, ways to control vermin and other chores and duties of the professional gamekeeper. Unfortunately, one is obliged to wade through many pages of extraneous material in order to discover and savor those sidelights on the management of a Midland shooting estate. This book cannot, however, take the place of J. R. Miller's Practical Gamekeeping.'

Viewpoint makes a difference."

The *Journal* doffs its hat to *Field and Stream.* We are awed.

The author is shown as he visited troops of the 1st Infantry Division in the field—Republic of Vietnam—January 1967.

Project One Hundred Thousand

BETTER UTILIZATION OF MANPOWER

By **STANLEY R. RESOR**
Secretary of the Army

The Critical Resource

Manpower must be ranked as the most important of all the ingredients of national power vital to our country's security. The efficient use of this resource is a matter of prime concern to managers and commanders throughout the Department of Defense as well as their counterparts in the other departments and branches of the Government. I would like to describe one of the most significant recent developments in our efforts to make the best use of our Nation's available manpower in meeting the personnel requirements of our military services. Although the program I will discuss is a Department of Defense project encompassing all military departments, my comments will be focused on the Army's participation and experience in this important endeavor.

Plan Ahead for Needed Skills

The basic factors in manpower utilization as they pertain to military service are twofold. First, we are constantly seeking more efficient ways to train and assign the men we induct and enlist making maximum use of special skills and knowledge they may possess prior to entering service. The Army has accomplished a great deal in this field through developing better training techniques and by automating as much as possible of our classification and assignment procedures. This has helped us to place the right men in the right jobs at the right time with the training they need to operate effectively. We have also reduced the amount of in-transit time required in moving men from one assignment to another. We expect to make further progress in all these areas.

The second factor, and a much broader one, involves more efficient use of the material in our national manpower pool. Following the Korean war, standards for induction, enlistment, and retention of Army personnel were raised, resulting in a gradual increase in the general educational level of our enlisted population. Service end-strength during this period was relatively small, thus allowing us to skim the high quality men from the top of the manpower pool.

Our experience in World War I and World War II showed, however, that we must dip much deeper into this pool during times of national emergency and induct, train, and use men possessing a wide range of mental ability and educational background. While we have done very well in adjusting to this requirement under emergency conditions, I believe that we could have done much better if we had made a concerted peacetime effort to gain experience in training and utilizing men with physical, environmental, and educational disadvantages. In short, we lacked a thorough program which would enable us to identify skill areas and levels of performance which could be achieved by men with minor physical disabilities or those who fail to score well on our preinduction and preenlistment qualification tests.

100,000 Men Each Year

A program announced by the Secretary of Defense in August 1966 is designed to provide the military services a vehicle through which they may gain experience in this field and, at the same time, allow thousands of young Americans to serve their country who had previously been denied this opportunity. The program is called Project One Hundred Thousand.

Under the physical and mental standards in effect through September 1966, over one-third of our Nation's draft age youth could not qualify for military service. This amounted to 600,000 rejections a year. Approximately one-half of this total failed because of educational deficiencies and the remainder by reason of physical defects. In discussing this situation in a speech before the Veterans of Foreign Wars on 23 August 1966, the Secretary of Defense said: "After studying the matter in close detail, I am convinced that at least 100,000 men a year who are currently being rejected for military service, including tens of thousands who volunteer, can be accepted."

Project One Hundred Thousand draws its name from this statement and as subsequently developed has three principal purposes:

- *Greater equity in applying the opportunities and obligations of military service.*
- *Recognition of the unique capability of the military training establishment to produce fully satisfactory servicemen among culturally disadvantaged men who have previously been deferred.*
- *Better and more farsighted military manpower planning.*

Goals and Quotas

In August 1966 Mr. McNamara directed that 40,000 men who then fell into the disqualified category be inducted or enlisted during the year from 1 October 1966 through 30 September 1967. This was called Phase I of the program. In the succeeding year (Phase II), and in each year thereafter, 100,000 of these men are to be accepted for military service.

In order to assure that program goals were met, quotas were established for each of the military services. Table A shows these quotas by service and the number of men accepted under Phase I of the program as of 30 September 1967.

Almost all of the men accepted in Phase I are those who were previously disqualified for failure to meet established mental standards; a small number were men who enlisted under the remedial medical program which will be explained later. Mental ability in this case is measured by scores attained on the Armed Forces Qualification Test (AFQT) and on various aptitude tests. Based on his score on the AFQT, each draft registrant is placed in a mental category ranging from Category I, the highest, to Category V, the lowest. Qualifying scores on this test are shown on table B.

In order to be inducted into the Army prior to 1 October 1966, draft registrants were required to score a minimum of 10 on the AFQT provided that they also scored at least 80 on an aptitude test called the General Technical (GT) and made a score of 90 or better on any two aptitude tests in the Army Qualification Battery (AQB). In order to expand into the portion of the manpower pool the Secretary of Defense made reference to in his Veterans of Foreign Wars address, induction standards have been progressively lowered. Today, in order to qualify for induction, a man who scores a minimum of 10 on the AFQT need only be a high school graduate or score 90 or better on any two of the AQB Tests. It has not been necessary to lower standards below this point in order to meet our established quota. Instead, we request that the Director of Selective Service supply a greater portion of monthly draftees from among those who were previously not qualified for service.

Phase I, Project 100,000

(1 Oct. 1966–30 Sept. 1967)

TABLE A—*Service Quotas for New Standards Personnel*

Service	*Quota*	*Number accepted (as of 30 Sept. 1967)*
Army	30,400	38,135
Navy	3,400	3,696
Air Force	3,600	3,943
Marine Corps	2,600	3,469
Total DoD	40,000	49,243

Armed Forces Qualification Test (AFQT)

TABLE B—*Qualifying Scores*

Category	*Score*
I	93–100
II	65–92
III	31–64
IV	10–30
V	0–9

All Services Revamp Standards

Because the Army is the only service that depends on the draft for manpower, these particular induction standards did not apply to the other services. The others did, nevertheless, lower their enlistment standards below those in effect prior to 1 October 1966, and sought their quotas of personnel for Project One Hundred Thousand from those enlisted under their new standards. It should be pointed out, however, that the pressure of the draft is one of the major inducements through which the other services are able to enlist sufficient men to maintain their programed end strengths.

While all services have been taking men in mental Category IV, the object of the new program is to dip into the bottom of the Category IV group and take a greater number of men in the AFQT 10–15 range. In order to assure that this objective is attained, each service quota for Phase II specifies the number of men in the 10–15 range who must be accepted. The Phase II quotas are shown in table C. Any service failing to meet its assigned quota on a quarterly basis will be given an appropriate number of lower mental category personnel through the draft.

Of the DoD total of 100,000 men to be accepted under the new standards during Phase II, 15,000 will be men who have minor medical defects provided that the defects are correctible within a period of 6 weeks after entry into service. This remedial medical program portion of Project One Hundred Thousand is voluntary in that each man accepted with a correctible medical defect must agree to submit to corrective therapeutic procedures. Shortfalls in this part of the program will be made up by a comparable increase in the intake of Category IV men. Quotas for remedial medical enlistments are shown in table C. During Phase I, a total of about 600 men in this group volunteered for service in the Armed Forces.

Phase II, Project 100,000

(1 Oct. 1967–30 Sept. 1968)

TABLE C—*Service Quotas for New Standards Personnel*

Service	*New standards men*		*Medical remedial*	*Total*
	Total	*AFQT 10–15*	*Enlistments*	
Army	60,800	(30,400)	9,600	70,400
Navy	8,900	(4,450)	2,100	11,000
Air Force	7,500	(3,750)	1,800	9,300
Marine Corps	7,800	(3,900)	1,500	9,300
Total DoD	85,000	(42,500)	15,000	100,000

Key Policies

In inaugurating Project One Hundred Thousand, the Secretary of Defense established the following key policies:

- *Minimum performance standards will not be reduced.* In order to be certain that the military services remain fully capable of performing their missions, men accepted under this program who fail to meet performance standards will not be retained.
- *Men accepted under the new standards will not be treated as a "Special Group."* They are not to be segregated in special units or in separate training installations. No stigma is to be attached to the fact that they are in a new standards group. They are to be given the same help and educational opportunities available to all other men and will be assigned solely on the basis of demonstrated ability.
- *Results of Project One Hundred Thousand will be closely monitored in detail on a continuing basis.* This is necessary if we are to meet program objectives, avoid impairing military performance and to provide research data that will assist us in improving our personnel system.
- *All services will share in this program.* The service shares will take into consideration their total input of new men, their occupational requirements, and their training capability.

Developed Data Invaluable

It is apparent from the quotas shown in tables A and C that the Army is taking by far the largest number of

Project One Hundred Thousand accessions which is enabling us to acquire a great deal of information we did not previously have concerning the trainability and utilization of lower mental category personnel. Information we acquire as a result of our experience will be made available to all of the other services. We expect to make wide use of this knowledge in our efforts to use our available manpower more efficiently and may find it especially valuable in the event we are again called upon to fully mobilize.

A part of Project One Hundred Thousand involves collecting a great deal of statistical information on all men who enter under this program. This information is obtained on a by-name basis for each of the men accepted under the new lower standards and covers 79 separate items. Particular care has been exercised to be certain that we do not set these men apart from the other men in their units or call special attention to them in the process of data collection. We are concurrently collecting the same data on small samples of men in the other mental categories. This will enable us to build a wider and a more valid base on which to judge the success of the program, will assist in pointing out problem areas, and will help in determining the overall impact of this program on the Army.

As a result of the first year's experience with Project One Hundred Thousand, we are taking a long hard look at our training methods and programs of instruction and finding better ways of accomplishing our training goals. Five of our military occupational specialty (MOS) training courses have been revised specifically to optimize our ability to train Category IV men. These are the supply, wheel vehicle mechanic, engineer equipment maintenance, switchboard operator, and marine hull repair courses. A great deal is being learned from this experience, and we expect to apply this knowledge profitably to a wider range of skill training when more data and qualitative information has been obtained.

Success and Promise

Although many of our Project One Hundred Thousand men require extra hours of instruction, remedial training, supervision, and counseling by unit commanders and instructors, we are having considerable success in qualifying them in basic training. Table D shows comparative attrition rates for the various mental category men during basic combat training. The rate of 2.9 percent for Project One Hundred Thousand men is not unusually high.

Out of 175 Project One Hundred Thousand men at Fort McClellan, Ala., six have graduated from the Leaders' Course and are now Advanced Individual Training squad leaders and an additional six have been recommended for the Leaders' Course. Many more of these men are turning out to be good soldiers, and most have proved to be adequate soldiers who successfully absorb and apply the training they are given.

Attrition rates in the MOS skill producing courses have been higher than in basic combat training. Normal attrition in these courses ranges from 2 percent in some of the less difficult skills to 17 percent in the more difficult, or an average attrition of about 8 percent. A recent survey of 7,800 Project One Hundred Thousand trainees in MOS courses showed an average attrition rate of approximately 4 percent above the average for all trainees. This is, nevertheless, much lower than we anticipated at the beginning of the program and is good evidence that these men can be taught useful skills and become productive soldiers.

While we still have a lot to learn about the Project One Hundred Thousand soldier, we have proven that he is trainable and we are, in fact, training large numbers of them in a wide range of skills. Our next step is to watch how well they perform on the job and how they compare in this respect with higher mental category personnel.

Attrition Rate

TABLE D—*Basic Combat Training*

[Percent]

	High school graduate	*Non-high school graduate*	*Average attrition*
Category I, II, III (31–100)	....	....	1. 5
Category IV (16–30)*	2. 3	3. 2	2. 8
Project 100,000 (10–15)	2. 6	3. 3	2. 9

*Some Project 100,000 men are in AFQT 16–30 group.

Project Benefits Soldier, Army, Nation

The Project One Hundred Thousand soldier will benefit greatly from this training and experience which he was previously denied. The Army has benefitted by meeting the challenge posed in training these men. It has helped us to improve our methods of instruction and training literature and has broadened and improved our training philosophy.

In a larger sense, our entire Nation is benefitting. Thousands of these men from culturally deprived backgrounds will return to civilian life with new and useful skills and a new and more confident appraisal of themselves as individuals. The ultimate impact of this factor on our military services will be difficult to quantify. It seems certain, however, that a strengthening of our national fiber through increasing the productively and self-confidence of thousands of less advantaged Americans will inevitably assist us in accomplishing our overall service missions in a more efficient manner. □

MEDAL FOR PROGRAM LEADERSHIP

The Joint Service Commendation Medal was awarded to Comdr. Herbert L. Gurnee, SC, USNR, for meritorious service as Department of Defense Coordinator for the Defense Contractor Cost Reduction Program from July 1966 through October 1967.

The award was presented to Commander Gurnee, October 31, at a ceremony in Arlington, Va., on the occasion of his retirement from the Navy after 20 years of active service.

Harrell B. Altizer, OSD Director for Cost Reduction Policy (at right in photo), made the presentation and praised Commander Gurnee for "his highly effective work in developing a receptiveness for the program in both Industry and Defense."

Commander Gurnee developed the first handbook for the Contractor Program and sponsored a series of Joint Defense-Industry Cost Reduction Workshops.

Contractors' plants participating in the Defense program increased 30 percent during Commander Gurnee's tenure as coordinator of that program.

The citation accompanying the Joint Service Commendation Medal follows:

"Commander Herbert L. Gurnee, United States Navy, distinguished himself by meritorious service from July 1966 to October 1967 as the Department of Defense Coordinator for the Defense Contractor Cost Reduction Program. He not only creditably guided the continuing development and improvement of the Defense Contractor Cost Reduction Program during a period of significant change, but also initiated many innovations in the management and administration of the Program. By his coordinating ability and forceful leadership, the national objective of economy in Government has been substantially furthered throughout defense industry and through all levels of the Department of Defense. By his exemplary performance of duty, Commander Gurnee has reflected great credit on himself, the United States Navy, and the Office of the Secretary of Defense."

NEW CONTRACTOR PROGRAM COORDINATOR NAMED

Thomas H. E. Winshurst is the new Coordinator of the Defense Contractor Cost Reduction Program in the Office of the Assistant Secretary of Defense (Installations & Logistics). He succeeds Comdr. Herbert L. Gurnee, SC, USNR, the first full-time Coordinator of the Contractor Program, who retired on November 1 (see story this page).

Mr. Winshurst has spent 2½ years in the Cost Reduction Program—as Coordinator for both the Internal and Contractor Programs for the Defense Contract Administration Services, Cameron Station, Va. Prior to that, he was an industrial specialist with Air Force Headquarters for 3 years and with the Air Force Contract Management District in Rochester, N.Y., for 12 years. He also served on the National Planning Group at DSA Headquarters which developed the plans for the DCAS organization. He chaired the "Contractor Guidelines" Panel of the 1967 Defense-Industry Joint Cost Reduction Workshops held at eight major cities last spring.

Mr. Thomas H. E. Winshurst (center) chairs a Panel Session on "Contractor Program Guidelines" at a Defense-Industry Joint Cost Reduction Workshop held in Chicago last April. Other panel members were Mr. A. C. Yoksas (left) Army representative, and Mr. O. G. Greene (right) Navy representative.

THE SECRETARY OF DEFENSE
WASHINGTON

September 22, 1967

MEMORANDUM FOR Secretaries of the Military Departments
Director, Defense Supply Agency

SUBJECT: Broadening the Department of Defense Logistics Management Improvement Program

The use of dollar savings as a means of measuring performance under the Cost Reduction Program gives us a good yardstick for evaluating the effectiveness of many of our major functions and activities. The pressures of goals, periodic reporting and audit validation have without doubt measurably increased our effectiveness in these areas over the past six years.

There are many functions and activities, however, where it is impracticable to attempt to measure performance in terms of dollars saved. These areas, in many cases, are just as important from a management viewpoint as those which can be measured precisely on the basis of dollars saved.

Accordingly, we plan to develop a series of management improvement areas in addition to those included in the Cost Reduction Program and Reporting System. These areas will be measured on the basis of performance rather than dollars saved. The Cost Reduction Program System will be used as the mechanism for developing and issuing criteria, developing annual performance goals, reporting progress and validating the results. We believe this technique will substantially enhance the management attention devoted to such areas.

I am asking the Cost Reduction Program Steering Committee to meet on October 4, 1967 to commence the identification of management areas which should be included in this effort and to assist in the subsequent development of the necessary procedures and reporting instructions. When this phase is ready for implementation, the total program will be called the DoD Cost Reduction and Management Improvement Program.

The development and implementation of this new phase of improved Defense management should be approached with the same urgency and priority now accorded the Cost Reduction Program.

/s/ Robert S. McNamara

MANAGEMENT IMPROVEMENT

By THOMAS D. MORRIS
Assistant Secretary of Defense for Installations and Logistics

Upgrading the Effectiveness of Logistics Systems

The Need To Improve

The Department of Defense has two objectives. The first is to build the necessary force structure and the second is to support it at the lowest cost. I want to talk about that support today.

The experts call it logistics—which is a gilt-edged military term for finding out what we need and then buying and using it.

Logistics is a costly business, running to about 70 percent of the Defense budget—or about $50 billion this year.

Logistics is also a very critical business because our troops in Vietnam depend on it for their lives.

Logistics ranks with tactics, strategy, and morale in winning or losing wars—and in complexity.

Logistics is dynamic. That is why military managers are constantly rearranging policies, procedures, techniques, and facilities. These managers are trying to stay on top of change by fixing on the right combinations of these elements—combinations that will most effectively put planes, ships, tanks—and everything else—where needed on time.

These combinations are called logistics systems. There are systems for calculating requirements—for almost 4 million kinds of items. There are systems for acquiring these items—through over 15 million purchase actions each year. There are systems for inventorying the items, for distributing them, and for maintaining them. There are systems for eliminating unnecessary items from supply systems. There are even systems for eliminating unnecessary systems.

While absolute perfection is not practicably achievable—and would cost more than its real worth—we must constantly strive toward the goal of doing the job better and more economically. Logistics systems are manmade systems and they can be improved only by maintaining the momentum and motivation for improvement of the people who operate them. That is the basic purpose of the DoD Cost Reduction and Management Improvement Program.

The Kinds of Results

Steps in the right direction are called management improvements. An improvement can produce any one of three kinds of results.

One result is to save money. That is what happened when the Military Sea Transportation Service departed from its longstanding practice of negotiating rates with associations of ocean carriers. MSTS found that negotiations with the individual carriers lowered rates on four routes. The lower rates saved us $3.7 million in Fiscal Year 1967. There were no other benefits—no detriments. The new rates did not cut shipping time nor improve the handling of cargo. This innovative departure from prior practice simply saved money.

A management improvement can save money and at the same time make a system more effective or an operation more efficient. The Army made its supply systems to Vietnam more effective when it eliminated Okinawa as a transshipment point. By augmenting depot facilities in Vietnam, supplies could be shipped directly from the continental United States. This saved some 60 days of pipeline time. The forward positioning of the stocks closer to the users and the more direct system for replenishing stocks made it possible to cut down on the quantity of items in the pipeline and at the depots. This management improvement action saved $45 million in Fiscal Year 1967. Economies aside—the really important effect was to create a quicker, more streamlined logistics system to support our men in combat.

An improvement action can produce a third kind of result—a result that can only be described in terms of systems and operational benefits and not at all in dollars and cents. For example: an aircraft maintenance shop runs an in-depth study of mean time between failures and finds that it can eliminate unnecessary overhauls and inspections by better scheduling. The resulting reduction in maintenance turnaround time makes more aircraft available for flight. The additional availability of aircraft certainly improves our military readiness. The systems benefit is apparent even though the improved readiness cannot be measured in terms of dollars saved.

The Measures of Progress

Thus, a management improvement action can generate a dollar savings or a systems benefit or both. I believe management should know how much of each—program by program, function by function. Without this information, it is difficult—if not impossible—to tell whether the organization is going uphill, downhill, or standing still. Without it, management cannot appraise its own effectiveness. With this data, management can pinpoint its troubles and then start to overcome them.

Our 6-year-old cost reduction program tells us how much money our management improvements are saving. The program has been phenomenally successful. Each year for the past 6 years Secretary McNamara has reported on that success to the President, to the Congress, and to the public.

Last year this program generated over 30,000 management improvement actions. These actions cut logistics costs over $1 billion in Fiscal Year 1967. The cost reduction effect of Fiscal Year 1967 actions on programs for fiscal years 1967, 1968, and 1969 exceeds $2 billion. We can report these results with accuracy and assurance because the Cost Reduction Program has a system for measuring savings, for validating them, and for reporting their aggregate effect.

In brief, the Cost Reduction Program mirrors management progress in a useful, acceptable, supportable way—but *only* progress in saving money. The Cost Reduction Program does not track progress in systems improvement or operations management except as an incidence of cost reduction. Yet, it is at least as important to measure and report the extent of this incidence as it is to measure and report the cost reductions. More—it is as important to capture in a useable format *all* substantive systems progress as it is to capture only that progress that is a byproduct or incidence of cost reduction. And it is as important to stimulate systems progress as it is to motivate cost reduction.

Just as management in government must know how it is doing financially, it must also know where it stands in its efforts to increase the effectiveness of its operations.

These techniques can help us:

(1) Identify the operations that—if charted—would best indicate the effectiveness of our policies.

(2) Select those operations which best lend themselves to the development of indices that will make objective appraisal possible.

(3) Develop the needed indices.

(4) Set goals in terms of the indices.

(5) Measure progress.

(6) Analyze the data.

(7) Report the results.

This approach forces an assessment of status quo and provides the impetus for action. It does this by:

- alerting intermediate management to those specific functions in which top management expects tangible improvements.
- bringing a high degree of visibility to the results of efforts in these functions.
- imposing the pressures of goals on those responsible for management improvement.

The Big Picture

Today, assessments of our overall logistics effectiveness can only be made from disjointed data oriented around narrow functional areas. There is data on our effort to reduce our backlog of proposed amendments to bring existing contracts up-to-date, i.e., the number of undefinitized change orders. There is data that concerns itself with rewriting out-of-date specifications to give them currency. Another effort trains its sights on eliminating unnecessarily duplicative items from the supply systems. There are many, many other similar efforts.

The catch is that all of them lack the cohesive force of a single all-embracing management system for sharpening goals, measuring progress, exposing performance that deviates sharply from expected norms, and explaining the reasons for the deviation. We can create that cohesiveness by combining analyses of cost management with analyses of systems management. The first formal step toward marrying these separate efforts occurred on September 22. On that date Secretary McNamara notified the Service Secretaries and the Director of the Defense Supply Agency of our plans: first, to measure certain logistics operations on the basis of performance other than dollars saved; and second, to use the Cost Reduction Program System as the mechanism for developing and issuing criteria, developing annual performance goals, reporting progress, and validating the results. The total program, when ready for implementation, will be called the DoD Cost Reduction and Management Improvement Program.

The cost reduction portion of this unified program will continue to use dollar value as the common measure of progress in the 22 logistics areas it encompasses. The management improvement portion will have no such common index. The standard might be dollars—as an index rather than as a savings (example: reduction in the value of letters of intent that are outstanding too long). The standard might be square feet if we are talking about utilization of warehouse space. The standard might be number of descriptions if we are talking about the Item Identification Improvement Program.

At the moment, a number of operations (involving such diverse subjects as Excess Inventory and Family Housing Occupancy Rates) are being analyzed for the best type of reportable data. We plan to express performance in each selected area in terms of units, percentages, gross dollars, number of items, or any other appropriate measure. Our sole criteria is that the unit selected must be capable of accurately reflecting the effect of management effort applied to a function or activity.

A unified Cost Reduction and Management Improvement Program can tell us where we were yesterday, where we are now, and where we should be tomorrow. This program can give us the best perspective of logistics we ever had. For the management improvement portion of this program, we can gain that perspective in three stages.

The first stage consists of analyzing each function. Are over-age letter contracts increasing or decreasing—and why? Are the number of unneeded items in the supply systems increasing or decreasing—and why?

The second stage consists of analyzing logistics areas—where each area is made up of a group of logically relatable functions. For example, the Procurement Area might encompass the ups and downs of usage in letter contracts, undefinitized change orders, Cost-Plus-Fixed-Fee contracting, and formal advertising.

The third stage is the integrated analysis of all logistics areas—an analysis of progress in the entire logistics program.

Since Cost Reduction Program progress is analyzed in the same progressive stages, combined cost reduction and management improvement analyses will provide a more complete status report than was ever before possible.

Secretary McNamara has assigned the development of this combined program and its management and administration to the Assistant Secretary of Defense for Installations and Logistics. To assure program integrity, Secretary McNamara has insisted on the same independent validation of results that the cost Reduction Program has been receiving from the Comptroller of the Department of Defense.

Current Logistics Systems

Does setting up this new program mean that for the past 6 years our logistics systems have been static? Of course not. We have made progress—considerable progress—in every aspect of logistics. This does not mean, however, that we cannot make more progress more quickly.

The acid test of a logistics system is its ability to stand up when the chips are down—and the chips are down in combat. Vietnam provided that test for the systems that exist today. We were able to quickly deploy approximately half a million men to a spot some 10,000 miles distant—and then to support these men in sustained combat operations. General Wheeler, Chairman of the Joint Chiefs of Staff, says of this effort that it is “as if one were to move a major American city some 10,000 miles, place it in a radically new environment, and expect every aspect of its existence—public and private—to be provided for without delay or confusion, and in the face of danger and difficulties such as most of its citizens had never encountered before.”

Vietnam imposed two kinds of demands on our logistics systems. First, it tested our capability to quickly create the physical plant and facilities required for extended major combat operations. The record is clear that this demand has been well satisfied. The Vietnam Construction Program includes as its principal elements:

- cantonments for the entire force
- six new deep draft ports, capable of receiving over 600,000 tons of cargo per month
- 8,000 hospital beds
- over 10 million square feet of covered storage
- 2.5 million cublic feet of refrigerated storage
- 26 million cubic meters of dredging
- 8 jet airbases (including 12 new 10,000-foot runways) and 80 auxiliary airfields

Our construction program in Vietnam is the subject of a recent report by a Congressional investigating subcommittee. The report had the highest praise for our accomplishments. (*Editor's Note: This report is reproduced on pp. 22–25.*)

Vietnam imposes a second kind of demand on our logistics systems—a demand on our ability to handle tremendously high rates of activity. Here, too, the record is impressive. We moved over 100,000 men to Southeast Asia in 120 days in the initial stages of the Vietnam crisis. Hundreds of thousands of items were supplied them—quickly, smoothly. The rapid buildup since then has tested our every capacity, and—even today—the tempo of that testing continues to rise.

The System Tomorrow

As proud as we are of this record, it offers no excuse for resting on our laurels. It is not enough that our logistics plans and preparations can handle all foreseeable crises. Nor does it suffice to say that these systems are the best we know how to design. The question is whether we could do better if we knew more and if we provided better motivation for our managers. The answer, of course, is “Yes.”

We are now in the process of designing a management improvement program that will gain our logistics systems that additional performance. A combined Cost Reduction and Management Improvement Program should subject our logistics systems to the strongest pressures for improvement they ever had by providing:

- current, comprehensive, and accurate readings on trends
- searching and incisive analyses of shortfalls in progress
- realistic goals ☐

GOLDPLATING NIXES GOLDPLATING

NAILED DOWN. Haig Kinosian of Electro-Optical Systems, Pasadena, Calif., wears a proud smile as he holds a Xerox chassis unit above the gold-plated nail-board (lower right) he designed for it. Nails, accurately placed with springs to reach 700 joints simultaneously, serve as time-saving circuit tester for unit.

Electro-Optical Systems, Inc., Pasadena, Calif., gold-plated some nails and saved money and time for Xerox Corp., its parent company.

Xerox had been turning out a chassis that was a jewel of tube connections—beautifully wired and soldered at each of its 700 contact points.

All that remained was a little matter of checking out all 700 points in the circuit to make sure that no break prevented the electrical current from flowing through the complete system.

This job was done the hard way—by manually checking each and every contact point.

The task was monumental. Enter Haig Kinosian of Electro-Optical Systems—who for years has been cutting through obstacles in the physical evolution of concepts—somehow making things work. Haig came, saw, and conceived an idea about chassis testing. Seeing the scope of the job as an outsider, he wondered if a simple clampboard could not be used to press down on each contact simultaneously, so that a single electrically-charged point would touch each soldered joint. This is what he said he did: "I went to a hardware store, bought 20 cents' worth of box nails, gold-plated them (for better conductance), set them between two pieces of board with springs to aid the contact—and there we were."

And there Xerox is. Without Haig's nail board concept, engineers say, a very complicated and expensive contrivance would have been required—and it would not have performed better, or differently.

THE WOMAN'S TOUCH

Roberta Shank has the distinction of being the authoress of the largest cost savings report ever submitted at the Boeing Atlantic Test Center at Cape Kennedy, Fla.

The savings she reported totaled $527,688. It stemmed from a management survey in which she made an exhaustive investigation through all BATC organizations of the use of various documents. Her investigation led to the elimination of 54 documents that had been maintained in the document control system.

Boeing Atlantic Test Center was established in the Cape Kennedy area in 1951 to support the Air Force Bomarc missile testing program at Patrick Air Force Base.

During the past 16 years, BATC has grown from a five-man organization to its present manpower level of approximately 5,000. Currently the Center is assisting the Air Force on the Minuteman intercontinental ballistic missile program, and the National Aeronautics and Space Administration on the Apollo/Saturn V and technical integration and evaluation projects.

Roberta Shank has been with the BATC since August 1964 and has been a statistician in its Document Control Section since February 1967.

Roberta Shank, above, saved $527,688 for Boeing Atlantic Test Center, Cape Kennedy, Fla., by purging the document control system of 54 unnecessary documents.

VALUE ENGINEERING IN PROGRAM MANAGEMENT

By **GENERAL JAMES FERGUSON**

Commander, Air Force Systems Command

VE Is Mission Oriented

The Air Force System Command's "triple A" mission is to advance technology, acquire systems, and advocate new weapons. The success of that mission hinges heavily on the wise use of resources in development and production programs. Value engineering policies and practices help assure that "wise use" by enabling us to *engineer more value* into our program management.

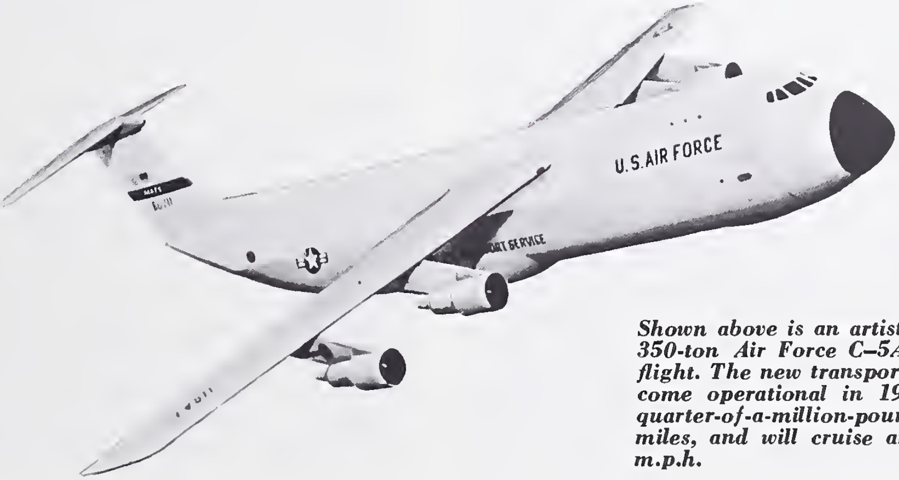
The presence of value engineering clauses in Systems Command contracts dates to 1962. Until 1964, we depended largely on contractor proposals for VE savings. Beginning in 1964, however, value engineering became an in-house concern as well as a contractor responsibility. The Air Force's direct role in value engineering has increased each succeeding year.

The in-house program came into being in 1964 when Secretary McNamara authorized a full-time value engineering program for all elements of the Defense Department. Of the 100 full-time VE manpower spaces allocated to the Air Force, 57 were assigned to the Systems Command. These spaces have been positioned throughout the command, ranging from 17 at Aeronautical Systems Division and eight at the Space and Missile Systems Organization, to two in Headquarters at Andrews AFB. With these limited resources we are trying to obtain active and aggressive VE participation on the part of the defense industries and to achieve a high level of benefit from our in-house activities.

For fiscal year 1967, a total of $78 million in value engineering savings was validated by Air Force Systems Command against a goal of $70.2 million. Another $66.6 million were validated against fiscal 1968 and 1969 objectives. Such results are gratifying, but in today's environment of fierce competition for funds we are far from being complacent about our overall cost reduction efforts.

Management Backing Essential

Experience has made it abundantly clear that value engineering cannot benefit management's cost control



Shown above is an artist's concept of the 350-ton Air Force C–5A jet transport in flight. The new transport, expected to become operational in 1969, will carry a quarter-of-a-million-pound payload 3,200 miles, and will cruise at more than 500 m.p.h.

The author discusses the intricacies of a special item of research equipment with Major Sarah E. Beard, 1966 winner of the Air Force Association's "Nurse of the Year" award. The equipment is installed at the USAF School of Aerospace Medicine, Brooks AFB, Tex., for use in helium-nitrogen bends studies. General Ferguson's article makes the point that value engineering should not be restricted to the hardware or production phases of an acquisition but that in-house management must also seek out and capitalize on all other opportunities for engineering dividends existing within the working environment.

objectives unless management first endorses and actively supports the intent of value engineering doctrines and the content of VE directives.

There are three points about value engineering and its place in program management that all of us in positions of responsibility must bear in mind.

First, the value engineering technique can be applied to anything that contributes to the cost of attaining a military capability. Further, it can be applied *at any point* in the life cycle of an acquisition—*wherever* and *whenever* savings can be realized.

Second, it's not the purpose or the practice of value engineering to curtail, impair, or eliminate a required function or an item of hardware as a means of reducing cost. Value engineering, therefore is a *positive*, not a negative, influence and should be treated accordingly. Through VE it is possible to realize improvements in performance, reliability, or maintainability—improvements which serve to pare costs by bettering our cost-effectiveness.

Third, the trend today toward discouraging changes in a procurement contract is not intended to work against the kind of improvements good VE can produce. We're not trying to outlaw changes. Rather, we want to be in control of changes, not let changes control us. One good way to do this, it seems to me, is to troubleshoot the places where changes seem likely, possible, or potentially fruitful.

Total Package Procurement

Clearly, real program management begins today at the proposal stage and continues throughout acquisition to the deployment of new systems. Program management is concerned with performance, schedules, and costs—*always costs.*

In fact, the pattern of program management is moving rapidly toward greater assurances of cost control throughout the life of an acquisition. The Total Package Procurement philosophy perhaps best reflects this approach to *economic stability* over the life cycle of a new system.

In this respect, we have lately rediscovered the value of the *definitive contract*—specific in terms of what the Government requires and explicit in what the price will be for delivering the product (or products) that meet those performance specs.

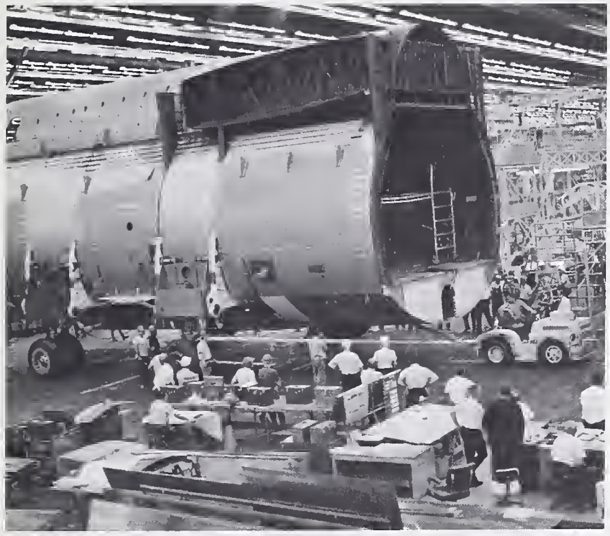
Total Package Procurement embraces the development and production phases of an acquisition under a *single contract.* It also includes as much of the support for a system as it's possible to define. The contract, therefore, contains price and performance commitments established at the outset of the acquisition phase of a new procurement. It includes, in fact, all the elements reducible to specifics prior to the start of the program.

After contract award, the Air Force can effectively "disengage" from direct item-by-item management with the contractor. The SPO, of course, retains an active "visibility" into the progress of the contract, but microscopic program management is no longer necessary. Within the confines of a definitized Total Package Procurement contract, the contractor is largely *on his own.*

Total Package Procurement and the other cost-control contracting procedures in vogue today provide a highly favorable climate for the dollar-stretching practices of value engineering. In the first place, it induces an early concern for costs, on the part of both the Air Force and the contractor. Secondly, under the terms of a single fixed-price incentive contract, a contractor stands to benefit profitwise from value engineering changes which lower development or production costs.

Early Action Increases Savings

Traditionally, value engineering has been applied primarily to hardware items during the production stages of a program, often in a somewhat random fashion. The advantages of moving the value engineering focus forward, to the development phase—or even earlier—are now becoming more apparent. If there are changes to be made to improve a program, it is clearly advisable to make them early in the development phase when the cost savings resulting from these changes can be reflected immediately in the production portions of the acquisition program. The accrual effect of such



The mid-fuselage section of the C–5A "Galaxy" overshadows a portion of the Lockheed-Georgia Co. production line of Marietta, Ga., as it rolls toward a mating jig. This section, above, is 53 feet long and 27 feet high. When other sections are added, the overall length of the fuselage will be 246 feet.

Looking like a Holland Tunnel with wings, the interior size of the world's largest aircraft is illustrated, graphically, by the 2½-ton truck shown moving into the nose end of the C–5A transport. Photo was taken from the rear ramp end of the fuselage.

savings can be especially important to any contractor seeking to improve his profit prospects over the run of the contract.

In the fiscal year 1967 value engineering program, nine actions accounted for 50 percent of the savings validated by the Systems Command. Three of these were the result of in-house value engineering efforts; the others were initiated by industry. The benefits ranged from a $5 million savings on a Minuteman component, resulting from a VE study conducted by our Special Weapons Center, to a $12 million savings achieved by Aerojet-General as a subcontractor on the C–5A transport program.

The C–5A program has proved to be a VE gold mine of sorts in demonstrating the savings to be accomplished through the functional analysis approach. Instead of reducing costs by chipping away at the costs involved in meeting a particular concept, value engineering techniques have been turned loose on the concept. For example, a VE study on the original method devised for removing and replacing the C–5A nose radome resulted not only in an improvement, but in an entirely different method. In addition to a reduction in weight, the new method resulted in a contract savings of $304,000.

As another example, Lockheed Georgia value engineered the six hydraulic systems specified for the C–5A and concluded that a four-system concept could do the job better. In fact, VE technicians produced a slate of seven direct and collateral advantages in addition to a savings of $1,196,000 for the 58 aircraft under contract.

The latest figures on the extent of our in-house value engineering activities show 30 projects approved at the local level, for a potential savings of some $23 million. One of these projects involves one of the small munitions items we're supplying for Southeast Asia. Through a number of design and materials changes, we've succeeded in reducing the cost 10 to 16 cents per item. This seems like a small savings, until we consider that production orders call for millions—as many as 40 million—of the items in this fiscal year alone.

Furthermore, my value engineering people tell me they haven't given up on this item. They think they may eventually cut the price 50 to 70 cents per unit.

VE Most Fruitful in Conceptual Phase

We're not in the discount business in the Systems Command but we've found out that if we are going to reduce prices it's best to begin at the wholesale instead of the retail level. With the assistance of the DoD Value Engineering Services Office, our people at the Electronic Systems Division recently conducted a rather interesting experiment in value engineering. Using the complex 407L tactical communications system, they set up a pilot program in "up-stream" value engineering. The purpose was to "plan ahead" and keep development efforts to a minimum.

The 407L system is an assembly of partially related subsystems and equipment items, in various stages of life cycle ranging from definition to operational acquisition. Despite the complications this presented and the pioneering nature of the effort, the VE 407L program has already shown $10 million in savings and promises to yield another $25 million.

I think it's very significant that in this instance all the potential savings have appeared during the *conceptual* or *definition* phases with most of the approved savings occurring *in* the *conceptual phase*. It therefore appears that the results of this pilot project may well verify the validity of value engineering in program management at the conceptual stage.

The Road Ahead

What, then, is the outlook for value engineering in the future?

First, I'm sure that value engineering clauses will continue to be included in all contracts of $100,000 or larger.

Second, I look for greater applications of VE earlier in the life cycle of a program to assure that a VE consciousness permeates the decisionmaking process and is prevalent at every management echelon.

Third, we will continue our motivation, training, and education programs to extend and enrich management's appreciation for the ways value analyses and value improvement can help them achieve greater effectiveness in their jobs. In this respect I want to emphasize the importance of developing value engineering programs within the climate of a favorable operating environment. Value consultants and value engineering craftsmen necessarily intrude on the professionalism of others, often with some understandable resistance. The earlier VE can be applied in an evolving program, the easier it will be to overcome this kind of resistance. Top management can assist in the successful application of VE principles by introducing and endorsing them in a positive, never apologetic manner.

Fourth, we must make stronger efforts to fully integrate value engineering into the development cycle. This calls for a greater, more comprehensive in-house effort. For example, in our ballistic missile program, validated savings achieved since 1964 in the concept and early development phases of product acquisition have yielded savings ranging from $43,000 to $5.4 million.

I think it's evident that in our in-house program we have better information on overall program objectives and are therefore in a better position to conduct value engineering during concept definition and early development. This allows us a greater range of alternatives to consider in our VE diagnosis. On the other hand, we don't have—and don't expect to have—enough people to explore all the areas where savings might be achieved. The success of our in-house program, therefore, will depend to some extent on our ability to perceive those areas or items most conducive to VE applications.

Fifth, to assist us in the early and judicious implementation of value engineering techniques, we are encouraging the various SPO's to urge not-for-profit companies such as Mitre and Aerospace Corp. to introduce and use value engineering in their systems engineering and technical direction activities.

Sixth, we are fostering a larger interest on the part of our Air Force Plant Representative (AFPRO's) in value engineering.

Contractors Can Make Major Contribution

The Defense Department will spend close to $30 billion this fiscal year on research and development and the procurement of various space and weapon systems.

Most of this sum will be spent on contracts between the various buying agencies of the Defense Department and individual companies.

The contractor plants under Air Force cognizance alone produce goods and services costing in excess of $4 billion each year. The annual expenditure in any one plant may range from $50 million to more than one-half billion.

I think it is quite apparent that the volume of dollars spent with these major contracts represents a fertile field for massive cost reduction through the application of value engineering. The plant representative is well positioned to assist in this effort.

From a broader viewpoint however, the Air Force *Plant Representative is uniquely qualified to serve the longer range objectives of the Value Engineering Program.* In his plant he has responsibility for the total conduct of Government business performed by the contractor. He assesses the effectiveness of the various contract clauses, evaluates the attitude of the contractor, and is familiar with the relative skills of various System Program Offices in achieving VE objectives. Now, if he is successful in analyzing the results of these observations, the plant representative may be singularly equipped to recommend some improvements which might elevate the VE yield.

The fullest possible advantage should be taken of this opportunity.

Unexploited Potential

Like the entire field of cost reduction and product improvement, value engineering must be everyone's concern. Management must be motivated as surely and as fully as the VE technician himself. Further, we must not restrict our value engineering enterprises to the hardware or production phases of an acquisition. Finally, we must capitalize on the opportunities available to us to make value engineering pay cost-control and collateral dividends in our in-house management efforts. Secretary Charles was very right in describing value engineering as a "versatile management tool." We have not yet realized the full potentials of VE in improving the efficiency and effectiveness of Air Force program management. We intend to move more firmly toward that goal in the year ahead. ☐

A Brick and Mortar View of—

CONSTRUCTION IN SOUTH VIETNAM

By **BRIGADIER GENERAL D. A. RAYMOND**
Chief, Southeast Asia Construction Division
Office of Assistant Secretary of Defense
(Installations and Logistics)

General Westmoreland (left in photo) presents the author with the Distinguished Service Medal in recognition of outstanding accomplishments while serving as Director of Construction, Military Assistance Command, Vietnam.

Program Parameters

The construction program in Vietnam, which has been underway for just over 2 years, is being carried out by some 40 battalions of Air Force, Navy, and Army engineer troops and a principal civilian contractor force that totalled 51,000 at its peak, but which now is being reduced.

The presently funded program of $1.5 billion is now approximately 65 percent complete.

The program includes as some of its principal elements:

- cantonments for approximately 500,000 men;
- 27 deep draft berths in six new ports, capable of receiving over 600,000 tons of cargo per month;
- 3 million barrels of POL storage;
- over 300,000 kw. of electrical power generating capacity;
- over 8,000 hospital beds;
- over 10 million square feet of covered storage;
- 2.5 million cubic feet of refrigerated storage;
- 26 million cubic meters of dredging;
- eight jet air bases including twelve new 10,000-foot runways;
- over 100 acres of ammunition storage pads, enough for over 500,000 tons;
- 6 million square feet of maintenance facilities to accommodate some 4,000 aircraft and 90,000 vehicles;
- over 80 auxiliary airfields;
- some 1,800 miles of primary roads to be upgraded.

Designing the Concept

The first step in the genesis of the construction program was that of developing requirements. This process began modestly in the late spring of 1965 and grew by leaps and bounds in a continuous evolutionary expansion. While it was obvious that certain function facilities, such as ports, air bases, and depots would be required, the how many and where were not so obvious. None of the factors which provide the basis for facility requirements determination—force structure, concept of operations, enemy reactions, and focal points of activity—could be pinned down specifically, nor would they stay put for very long when estimated. The operational and logistical situation was dynamic then and continues so today. Nevertheless, in spite of the rather vague definition of requirements, starts had had to be made. A program had to be defined as a vehicle on which the Congress could base authorization and appropriation action; decisions had to be made for the mobilization of civilian contractor forces; and procurement of equipment spreads and bulk materials had to be initiated. It was about 18 months later or the end of calendar year 1966 before the program came into focus sufficiently clear that its total parameters could be visualized. By then we were well down the road.

The picture that finally evolved was that of four semiautonomous logistical and operational areas, each having as a focal point a principal deep water port around which is located a complete logistical complex. Da Nang, Qui Nhon, Cam Ranh Bay, and Saigon are these focal points. Each of these areas also has two or more major air bases. Each serves as the mouth so to speak through which are fed all operations in each of the four areas and from which all operations support radiates. The connotation of autonomous areas arises from the initial absence of dependable ground lines of communications to interconnect the areas, and the consequent necessity for the bulk of such lateral movement as is necessary to be by water. On a supplementary basis, these areas are tied together by an intratheater system of air lines of communications. As time passes, the available ground lines of communications are being extended and once again interconnected. Even so, the concept of logistical support from four separate focal points will continue as an efficient and economical basis of support.

The program is quite different in many respects from any previously undertaken in an active theater of war. In this regard it established many firsts, mostly reflecting the centralized management controls imposed by the Secretary of Defense, which we will undoubtedly see more of in the future. To cite but a few:

- the program is developed on a project-by-project basis and must be justified to the Congress in the same manner as peacetime construction programs;
- detailed reporting on funds and status are required to the Washington level;
- the Office of the Secretary of Defense plays a dominant role in construction management to include control of reprograming, certification of requirements by the systems analysis approach, and allocation of contingency funds; and
- Congress must be consulted on and approve major reprograming actions.

- To date, civilian contractor organizations have been assigned over two-thirds of the dollar value of the work to be accomplished.

The Money Mix

Having developed at least a general order of magnitude and scope of requirements, the securing of funds to provide the wherewithal was the next order of business or more precisely a concurrent order of business. Funding of the program to date has been accomplished through a series of appropriations—three regular, one amendment, and three supplementals. In addition to these appropriations which may be termed normal, we were fortunate also to have significant contingency funds available. Over $200 million in such sums were requested by Defense, and were made available by the Congress to the Secretary of Defense. A substantial contingency is also included in the 1968 appropriation. We could not have kept the "show on the road" without these contingency funds to meet unforeseen needs and circumstances. Still another funding vehicle utilized in early 1966 on a temporary basis to initiate material and equipment buys, while awaiting appropriations, was the Navy stock fund, $200 million of which we were allowed to obligate against, provided no bills became due prior to receipt of our appropriations.

The appropriation cycle has been somewhat unpredictable both as to timing and content. The pertinent questions of how much we will be allocated and when it will be available are always before us. The necessity to follow a complete programing cycle of several months' duration to obtain funding for construction support in an active theater of war is to say the least a challenging experience.

Resources—Contractor and Indigenous

The third ingredient of the construction program was the mobilization of resources. In 1965 the President had decided not to call up the Guard or Reserves which contained the preponderance of mobilization troop construction units. This policy decision dictated that contractor effort be relief on to an extent unique in the annals of warfare. Mobilizing an adequate contractor capability in as short a period as possible under existing circumstances posed problems of a nature in which little experience data existed. In the time frame in which mobilization had to be initiated we still did not know specifically what would be constructed, or where, *BEFORE*

At Pleiku, in the central highlands, when the construction team lacked rock-crushing capability to prepare the base course for a 6,000-foot runway, it was necessary to resort to the ancient method of crushing rocks by hand. A bit slow—but it worked.

nor how large the program would be. Nevertheless, basic guidelines had to be established on which mobilization could proceed. Some of the more significant of the guidelines which emerged were these:

- The contract program value would approximate $1 billion.
- The program would be executed in a time span of 2 years.
- Monthly work placement would have to average $40 million.
- Work on all major operational and logistical projects of a critical nature would have to proceed concurrently.
- Makeup of the contractor force would be on the basis of a balanced capability stated in terms of functional requirements, i.e., earthmoving, pacing, dredging, aggregate production, waterfront structures—and so on.
- Materials would be procured in bulk on the basis of general estimates as to types and quantities required for gross facility requirements.
- Construction would start on the basis of 30 percent drawings or less, if appropriate, and the "less if appropriate" turned out to be almost the general rule.

On the troop side of mobilization, engineer units available were started on their way in the late spring of 1965 and the formation of additional units was undertaken on an expedited basis.

AFTER

The work tempo speeded up when the contractor was able to bring in modern crushers like the one shown above. This equipment turned out crushed rock at the rate of 400 tons per hour.

In June 1965, there were two Army construction and three Navy Seabees battalions in-country. By June 1966, this had grown to 22 battalions, consisting of 13 Army, seven Navy, and two Air Force civil engineering squadrons. By June 1967, this total had grown to 40 battalions and squadrons.

While the troop strength has increased to date, the contractor forces peaked in September 1966 and are now being reduced to a lower level of effort. This reduced contractor effort results not only from the corresponding increase in troop capability, but also from the virtual completion of much of the heavy construction requirements such as ports and air bases.

The Management Structure

The final step undertaken to facilitate the execution of the program was one to provide centralized control. In the fall of 1966 the program was characterized as "consisting of three programs, four execution agencies, and having four bosses." The programs were in competition for resources; the desired degree of coordination was not provided; theater needs were in some cases being subordinated to service needs; and the responsiveness to changing requirements was less than desired. What was needed was a tying together of all agencies and programs into one comprehensive effort.

Accordingly, a series of steps were taken to do this. In mid-1965, an engineer element for base development planning was established within the logistics staff area of MACV. In November 1965, this element was further upgraded when the position of Deputy for Engineering in the Logistics Staff element was established, and as a final step in February 1966, a Directorate of Construction for MACV was established as a separate joint staff element.

The mission of the Director is briefly "to direct, manage, and supervise the combined and coordinated construction program to meet MACV requirements and coordinate all Department of Defense construction efforts and resources assigned to MACV or in the Republic of Vietnam."

He is assigned specific functions:

- to advise the commander on all engineer and base development matters;
- to exercise directive authority over all DoD construction commands and agencies both military and civilian in RVN (this has been characterized as similar to the authority a Division Engineer exercises over District Engineers in the Army Engineer Organization);
- to determine percent and future construction requirements, and forecast construction force requirements and capabilities;
- to coordinate the construction efforts of all commands and agencies;
- to exercise authoritative direction and control over the application of all program funds;
- to establish priorities and allocate resources;
- to establish and approve, where necessary, standards and criteria; and
- to manage an overall status reporting system.

Coincident with the establishment of the Directorate in Vietnam, the position of a General Officer Staff Director for Southeast Asia Construction in OSD was also established. The concept embodied in the mission and functions of the Director of Construction is not unlike that exercised by the former Theater Engineer of other wars. It has been effectively implemented. There is now in Vietnam in the construction area a true theater program, one set of resources, a unity of purpose among all engineering organizations, and a genuine community of effort among all engineers, both military and civilian.

A Few Hindsights

Finally, I should like to close with a few observations, which in the light of hindsight, would make the job easier next time.

I have already mentioned the difficulty we had developing requirements and the program to support them. Aside from the dynamic nature of the situation which would have made this difficult in itself, we were hampered initially by the absence of adequate planning groups, both in quantity and quality. The sheer magnitude of the task dictated the early establishment of capable planning groups staffed with broad visioned, experienced personnel, yet we were several months in putting such groups together.

We probably planned to do too much initially with contractor forces, particularly where we mobilized such forces at small volume locations where the eventual workload was insufficient to justify the cost of mobilization. In such circumstances in the future there is very definitely a role for contractor forces, but such efforts should be limited to the few locations where a large volume of work is to be turned out. Contractor forces are ideally suited to major installations such as air bases, depots, and ports. In recent months in Vietnam the contractor effort is being consolidated into only the high volume areas.

Probably the greatest problem we faced on a continuing basis was that of so-called cost overruns in the contract portion of the program. This difficulty is inherent in the situation such as we face in Vietnam. What we really bought in terms of contractor forces was a capability consisting of men, materials, and equipment, estimated at its peak to be equivalent to 40 battalions. The cost of this capability is determinable for a given period of time, but to translate this overall capability cost into the cost of a particular square foot of anything, in advance, is impossible. Yet, this is what we tried to do. The budgeting system for appropriations required that we submit an aggregate of project cost estimates—even though the mix and quantity of

In a striking "before" and "after" contrast, the two photos above of the Chu Lai Peninsula graphically illustrate the tremendous progress made in one short year of intensified construction effort.

items was in a state of constant turbulence. Those in positions which required that they review and analyze our program insisted on evaluating our costs against the familiar yardsticks of stateside unit costs—a review and analysis they found most frustrating from the standpoint of correlation. Using cost estimates for individual items presupposes one knows how many items of what type will be produced, in what configuration, and for how long the production capability will operate. Especially in the early days we were inclined to overestimate greatly the quantity of facilities that could be produced for a given capability cost. In any future circumstance such as that in Vietnam, we should seek to do our bookkeeping on the basis of capability costs, with only essential correlation between these costs and the ultimate scope of facilities produced by the capability.

In executing our program, we are still faced with the necessity to be able to accommodate constant change. We needed flexibility to keep up with the dynamic nature of evolving requirements—to move projects, to expand or contract, to delete and substitute on short notice. We were authorized a system that was responsive to our needs, though not as flexible as we would have liked.

Initially, we were permitted to program in broad functional facility groups such as "cantonments for so many men" or "ports" as a single countrywide item. Congress appropriated our funds as requested in a lump sum for each service. With succeeding programs and appropriations, however, controls grew. The functional groups were replaced by the more numerous and specific standard Department of Defense category groups. The countrywide requirements were tied to specific locations by service, and though our funds were still appropriated legally in lump sums, we were tied administratively to the program base of projects submitted months in advance. Significant changes must go all the way to Congress for approval. Fortunately, a rather short time frame is prescribed within which reprograming actions have to be specifically killed or stand approved.

Success the Ultimate Tribute

Finally, lest my remarks be construed as implying that our problems may have been nearly insurmountable, I should like to make it clear that this was not the case. The provision of operational and logistical facilities in support of the rapid buildup and an everincreasing tempo of operations has been and is being achieved in the time frames and quantities required. No operations to date have been inhibited for lack of facilities.

The teamwork, skill, and endeavors of the entire American engineering community out there—both military and civilian—is a magnificent tribute to the "can do" and "know how" of the American engineering profession. □

PHARMACEUTICALS COMPOUNDED LOCALLY

The Pharmacy Service, U.S. Army Hospital, Ryukyu Islands, not surprisingly, had been filling prescriptions for outpatients from bulk purchases of brand name commercially prepackaged, precompounded drugs.

A study revealed that the components of the compound could be purchased in bulk and combined in the Pharmacy Service at great savings. No additional costs were incurred in undertaking the new action since equipment and personnel required for the mixing process were available. The savings for fiscal year 1967 for locally compounding pharmaceuticals amounted to $7,539.

THE VIETNAM CONSTRUCTION PROGRAM

Highlights of a Congressional Subcommittee's Report

The following text is excerpted from a subcommittee report (dated May 6, 1967) to the Committee on Armed Services, House of Representatives, Ninetieth Congress, First Session. Photos do not appear in the report but are inserted here by the Journal.

Background

Until early 1965, military logistic support in Vietnam was provided out of Saigon to serve only 23,000 American military personnel in scattered locations throughout Vietnam. There were practically no stocks of supplies in Vietnam nor were facilities available for the support of large military forces. Saigon was the only usable deepwater port with a significant discharge capability.

Within 1 year, troop strength had grown to over 185,000 in Vietnam and by the end of 1966, U.S. military personnel strength was 435,000. In addition, the United States was supplying logistical support to over 53,000 other free world forces and MAP support to the South Vietnamese armed forces.

In January 1965, the supply requirements were approximately 65,000 measurement tons (40 cu. ft.) per month. Today, we are moving about 20 times that amount of 1.2 million measurement tons per month into Vietnam, the bulk of which has to be shipped or flown from the continental United States, approximately 10,000 miles away. This figure excludes bulk POL where consumption has also increased rapidly from 583,000 barrels in July 1965 to 2.3 million barrels by November 1966 and, within the short time since, the consumption rate has increased by 12 percent to 2.6 million barrels.

These accomplishments in moving personnel and supplies and providing for the required sustaining support were realized as a result of a major construction effort to develop the required ports, airfields, storage facilities, and cantonment areas.

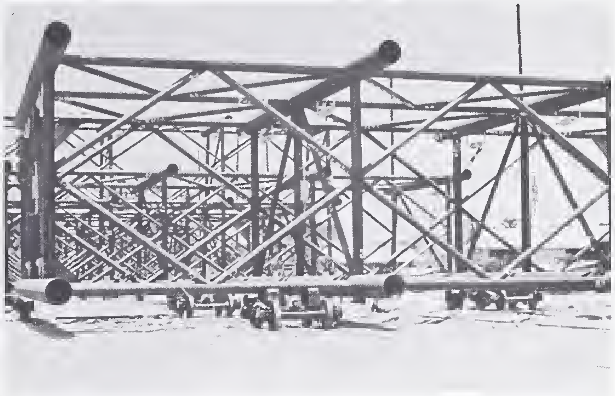
Buildup of Construction Capability in SVN

Early in calendar year 1965 the joint venture of Raymond International and Morris-Knudsen was performing construction in Vietnam primarily on projects financed through the military assistance program (MAP) at a monthly rate of between $1 million and $2 million. No construction for U.S. military forces was underway and there were no U.S. military engineers in-country.

The construction of facilities to support the rapid deployment of troops and aircraft into almost virgin territory, mostly under Vietcong control, was a challenge. The necessary plans were made, programs were prepared, funds were requested, and orders were issued to greatly expand the contractor force and to train, equip, and deploy a large number of military construction troops urgently to South Vietnam. The first construction battalion landed over the beach at Chu Lai in May 1965 to place an airstrip of AM–2 matting. The over-the-beach approach at Chu Lai was typical for most areas to be developed since there were neither offloading nor storage facilities for U.S. military supplies.

At first, combat deployments preceded or paralleled the preparatory actions underway to construct the needed facilities. The rapid rate of deployments and the leadtime required for procuring and shipping materials and for construction inevitably meant a time lag before the facilities support could catch up. This time lag was accepted by the operational commanders in view of the pressing combat exigencies requiring the earliest deployment of combat forces. As the buildup continued, the scope of the supporting construction program has had to be correspondingly increased. The urgency for providing minimum initial support required that the early construction be of an emergency, expeditionary nature. For example, troops were initially based in tents which were later framed and floored. As canvas deteriorated, the tents would be replaced by wooden "hootches." Provisions for sanitation, water, and electrical services have been by increments. The same applies to such items as runways, waterfront facilities, maintenance facilities, and roads. In the meantime, additional construction requirements were generated by the requirements arising from changing tactics, the opening of new areas, the shifting of troops, and increase in forces or change in the mix of forces. The rapid provision by the Congress of the authorization and funds necessary to support this vital program was the key to its successful accomplishment.

This is Observation Point at Da Nang, the site selected for a major deep-draft port, as it existed in March 1966.



Pier sections were prefabricated at Poro Point in the Philippines—about 1,000 miles away, across the South China Sea.

The contractor workforce at the peak of employment in July 1966 was about 52,000 personnel, but has since been reduced to about 30,000 personnel as of April 15 by regrouping the contract effort from many scattered locations to major enclave areas. The rising troop construction capability and the extent of completed work has made possible this cutback in contract operations. The full extent of the contractor phasedown this calendar year is still under study, pending a further evaluation of the degree to which troop construction effort will have to be diverted from the military construction program to a combat support role. The combination of contractor and troop effort is now completing over $60 million of work-in-place per month.

As a matter of policy, the maximum amount of construction will be carried out by available troop construction resources, reserving contractor effort to make up the difference. The use of troops for construction, except in special fields, is less costly in military construction expenditures. Also, there are major advantages to the use of troop labor in the control that can be exercised, greater flexibility of movement, ability to provide their own security and continue working under fire, and the self-sufficient capability of troop construction units to select sites, layout, and design the facilities, and to construct, operate and, if necessary, to maintain them. For this reason, in a combat zone such as Vietnam, civilian contract construction is considered as a backstop for troop construction. However, it can be readily seen in visiting the construction sites in Vietnam, especially with respect to the heavy port and airfield construction, that the rapid progress made could not have been accomplished without the RMK–BRJ combined capability.

Other civilian contractors also have contributed to the construction effort such as Walter Kidde Constructors, Inc., which served as the "turnkey" contractor for the $52 million airbase at Tuy Hoa; the Vinnell

The prefabricated sections were assembled for moving to the construction site.

The two prefabricated permanent piers were in place and in operation within a few short months.

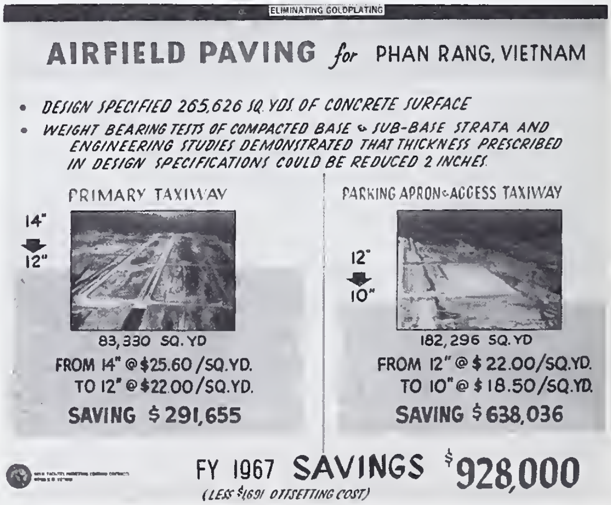
Corp., which is supplying electric power to various bases from 11 converted T–2 tankers; the DeLong Corp., which fabricated and erected the DeLong piers which made possible the early availability of a number of deep-draft berths; and the contractors on communications projects, such as the Philco Corp., turning out completely operable facilities with highly sophisticated equipment of extreme importance to the war effort.

Standards and Criteria of Construction

Due to the large amount of funds being spent on military construction in Vietnam, the subcommittee took particular interest in the types of facilities constructed and the standards and criteria used for this construction. It was found that construction was austere and was being held to minimum essentials required to meet functional needs for a limited tenure. Construction, for the most part, was of the type that would give the quickest beneficial occupancy consistent with operational needs and functional effectiveness. For example, expeditionary airstrips of aluminum matting were installed to obtain a usable facility in the shortest time. However, since these strips are of short life, it was necessary to immediately start construction of a concrete airstrip to maintain the operational capability for sustained operations. On the other hand, the majority of the structures are either wood or light metal preengineered buildings. The subcommittee expects austerity in standards and criteria on construction in view of the fact that the U.S. mission in Vietnam is of limited duration. On the other hand, sufficient durability should be incorporated in the specific facilities to avoid excessive maintenance costs over this short term.

Criteria for Cantonments

The subcommittee looked into how such standards affected the troop cantonments. There are brigade or



ELIMINATING GOLDPLATING

AIRFIELD PAVING *for* PHAN RANG, VIETNAM

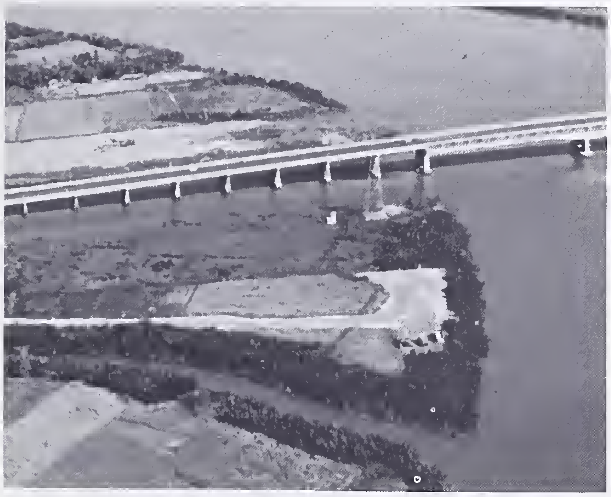
- DESIGN SPECIFIED 265,626 SQ. YDS. OF CONCRETE SURFACE
- WEIGHT BEARING TESTS OF COMPACTED BASE & SUB-BASE STRATA AND ENGINEERING STUDIES DEMONSTRATED THAT THICKNESS PRESCRIBED IN DESIGN SPECIFICATIONS COULD BE REDUCED 2 INCHES.

PRIMARY TAXIWAY	PARKING APRON & ACCESS TAXIWAY
14" → 12"	12" → 10"
83,330 SQ. YD	182,296 SQ. YD
FROM 14" @ $25.60 /SQ.YD. TO 12" @ $22.00 /SQ.YD.	FROM 12" @ $ 22.00/SQ.YD. TO 10" @ $ 18.50/SQ.YD.
SAVING $ 291,655	SAVING $ 638,036

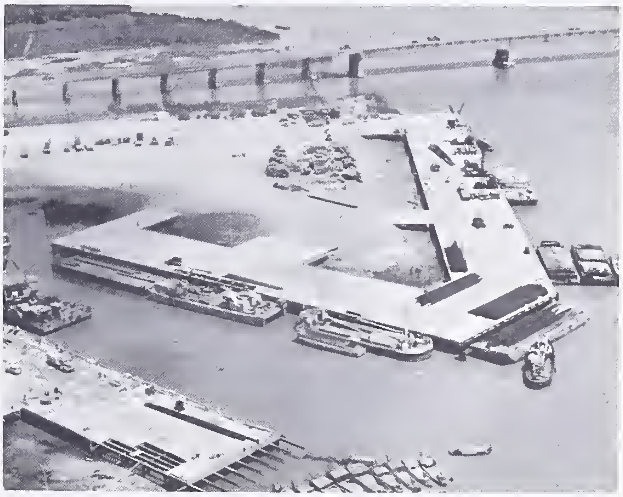
FY 1967 SAVINGS $928,000

(LESS $1691 OFFSETTING COST)

During construction, over 3,000 cubic meters of sand was moved each day by sampan.



In January 1966, this rice paddy 2 miles north of Saigon was selected for the site of a major deep draft port.



The project was ready for operation in October 1966.

equivalent size cantonments being provided at 42 different locations. It was found that cantonment construction in the Army program had not progressed at the same rate as some of the other facilities and were at a considerable lower standard than the cantonments of the other services.

While some differences are understandable, such as the housing for night-flying jet pilots as compared to that of the normal infantrymen, the differences are not so readily understandable in other cases. For example, at Cam Ranh Bay and the Sattahip area of Thailand where the Army cantonments were substandard when compared to those of the Air Force and Navy in the near vicinity. The subcommittee believes that especially where cantonments are in close proximity, the greatest care should be exercised to maintain a common standard. In particular, it was noted that Army base camp cantonments lacked running water, waterborne sewage, suitable power, and paved roads, all of which are considered essential by the commanders concerned. The subcommittee understands that the Army cantonment program will receive additional attention in the fiscal year 1967 supplemental construction execution program.

Conclusion

Construction on the overall program through the fiscal year 1966 supplemental at a funded cost of $1.1 billion for Vietnam is about 60 percent complete. The subcommittee is satisfied that the program is being effectively managed and that construction is proceeding at a desirable rate. In fact, the accomplishments to date obtained the highest praise from the members. It is obvious to the subcommittee that much construction remains to be done and that new requirements are continually generated by military developments. ☐

NAVY MK 4 GUN POD PROGRAM

Team Effort Nets Government $33 Million in Cost Savings

Value Engineering has been and is continuing to be an important element in the development and improvement of the Navys' MK 4 gun pod and its components.

A Value Engineering team was formed that established and analyzed worth-value charts for the pod. Eleven specific items were evaluated in detail, redesigned, and developed to provide a better pod as to function, reliability, maintainability, and overall value. The result of the study is a saving of more than $33 million.

The smoothbore barrel concept resulted in a 75-percent reduction in total cost over the original rifled barrel requirement.

Savings are "Made" and Not Found

Dollar savings, in the sense of a cost reduction program, must be created. Unlike the proverbial money tree, the savings are not just there for the taking, they must be "made" by the joint aggressive activities of both industry and DoD representatives. The Navy/Hughes Tool Co. Mk 4 Gun Pod Program, designed and developed by Hughes Tool Co., is a case history in point where substantial savings resulted from a Value Engineering team effort under a Government-funded VE program requirement. From the original gun concept of Frank Marquardt of Naval Air Systems Command, throughout the years of development, to the operational weapons system employed on Navy and Marine attack aircraft, Navy program managers and the personnel of Hughes Tool Co.'s ordnance division have worked and planned together to create a truly cost effective system. While cost conscious efforts were continuous during the development, formal value engineering began between the prototype and production phases.

$33,000,000 Saving Realized

Jumping off from a ready-for-production design, the Value Engineering study team achieved savings totalling $33 million for 829 production units. The team, consisting of members from the company's engineering, manufacturing, purchasing, and quality assurance areas, strongly encouraged and supported by NAVAIR personnel, established new design concepts, eliminated parts, increased individual component lives, and developed new manufacturing techniques to create the saving.

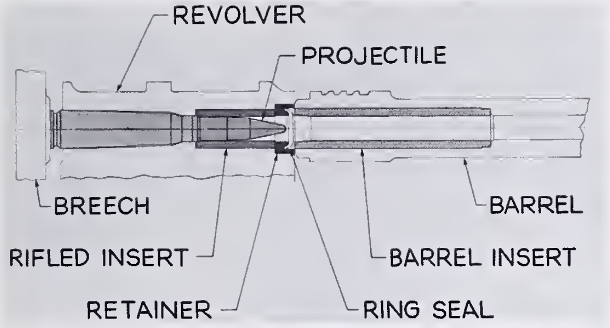
By **REAR ADM. ROBERT L. TOWNSEND**
Commander, Naval Air Systems Command

Smoothbore Barrel—Big Savings From Bold Ideas

The largest single saving in the program, almost $29 million, was made by incorporating a concept, never before used on operational weaponry, into the production design. In its prototype phases, the Mk 11 Gun was equipped with conventional rifled barrels. As on all high-rate cannon, these barrels were relatively short-lived. Subjected to the erosive action of 5,000 degree propellant gasses, the rifling gradually disappeared until the barrel no longer stablized the projectiles. The Value Engineering study team recommended conversion of the gun to the smoothbore barrel system.

In the smoothbore barrel concept, projectile spin stabilization is provided by eight rifled inserts located within the revolver cylinder. Because each of these inserts is exposed to only one shot for every eight fired from the gun, a short, but important, cooling period is provided. The life of these small, replaceable, inserts is

The author (left) and Lt. Jack Ready, Naval Test Pilot, examine Bullpup missile mounted on A7A aircraft at the Naval Air Facility, Andrews AFB, Md.



Schematic diagram of the components in the Navy/Hughes MK 11 Smoothbore Barrel Gun System.

10 times the life of a rifled barrel. As the projectile leaves the rifled insert and enters the barrel it is traveling about 900 feet per second and spinning at a rate of 130,000 r.p.m. The barrel guides the projectile while the burning powder continues to accelerate it to a muzzle velocity of 3,300 feet per second. At the time the bullet leaves the muzzle its spin rate has decayed slightly, to 120,000 r.p.m. (2,000 revolutions per second). Barrels last much longer because they only guide the projectile while it accelerates and are no longer called upon to impart spin.

There were still more savings to be made. Observing that the breech end of the barrel erodes 50 times faster than the muzzle, and more than five times faster than a point 6 inches forward of the breech, the team recommended that the barrels be equipped with a replaceable sleeve. This barrel insert can be readily replaced in the field to double or even triple barrel life.

Savings From Several Sources

The smoothbore barrel system is providing savings not only from direct cost reduction, but from a variety of other sources as well. While smoothbore barrels are less expensive as a result of elimination of the rifling, it is the increase in component life that provides the bulk of the saving. Each smoothbore barrel takes the place of almost five rifled barrels. This creates a collateral saving in logistic costs. For example, where 3,200 pounds of rifled barrels would have been needed to support one pod for life, with smoothbore barrels less than 750 pounds are required. This represents a reduction in spares transportation requirements of 1,000 tons for the program.

Tail Fin Elimination Saves $48,700

The Mk 4 pod was originally fitted with horizontal tail fins which were intended to stabilize the pod when jettisoned. A computer study supported the belief that these fins could be eliminated. Full-scale drop tests confirmed the computer study. The new design resulted in a simplified, lighter structure, with a length reduction of 9 inches. Packaging, shipping, and storage were all improved. This more conventional Value Engineering study produced a net saving of $48,700.

Value Efforts Not Limited to Cost Reduction

Not limited to value improvements in the strictest sense of the word, the study team also examined simplifications in design that would result in improved maintainability and ease of operation. Early models of the Mk 11 gun were fitted with a recoil booster assembly that was bolted to the receiver sideplates. The use of tools was completely eliminated and barrel change time was reduced by 80 percent by the design of a quick-disconnect assembly. Shipboard handling is greatly facilitated by this system which allows the pod nose and barrels to be removed to allow the use of smaller elevators for movements to and from the flight deck.

Three MK 4 Gun Pods on an A–4 over NWC-China Lake, Calif. Three pods carry 2,250 rounds of 20-mm. ammunition and fire at a combined rate of 12,600 shots per minute. Loaded weight is 1,390 pounds. These self-powered, self-contained pods are in operational use in Southeast Asia on the A–4 and other Navy and Marine aircraft.

Effort Required

Incorporation of change recommendations that produced these savings was a difficult task. Engineering costs to investigate new methods were $414,000. Recognizing the potential gains, Government and company program management vigorously supported the value team and its concepts. After engineering, $968,000 in research and development testing was required to prove out the new systems. The net program savings of $33 million stand as testimony to the efforts and foresight of the Navy/Hughes team that worked together to provide an end product that was less costly, more reliable, lighter, and easier to ship and maintain. The team literally "made" the savings; they didn't find them. □

PRESIDENT HONORS COST REDUCERS IN WHITE HOUSE CEREMONY

President Johnson holds up a plastic plate used to vent packing crates. The plate cost only 10 cents and replaced a steel plate costing $1. The substitution was the idea of Ralph Pizzello, Toole Army Depot and saved $11,556 in fiscal year 1967.

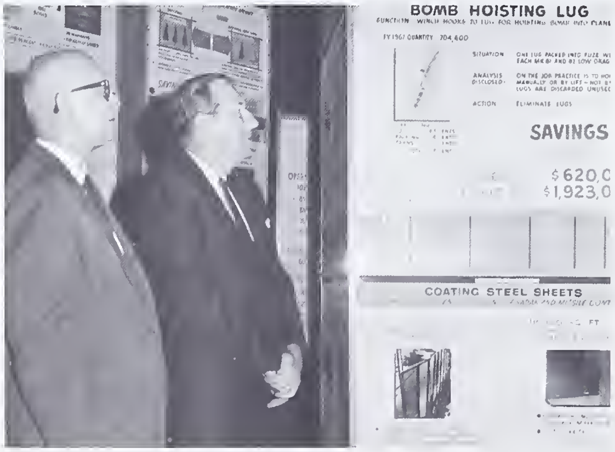
Eleven DoD cost reducers received certificates of merit from President Lyndon B. Johnson at a ceremony held in the East Room of the White House on July 27. The ceremony was the highlight of Cost Reduction Week observed July 24–28 throughout the Department of Defense. The week is celebrated annually to recognize the thousands of military and civilian personnel in the DoD whose ideas and efforts produced more than $14 billion in savings since the establishment of the Cost Reduction Program in 1962.

Other participants in the ceremony were Secretary of Defense Robert S. McNamara, Secretary of the Navy Paul Ignatius (then the Assistant Secretary of Defense for Installations and Logistics), and General Earl G. Wheeler, Chairman of the Joint Chiefs of Staff. The presentations were witnessed by members of the Cabinet, Members of Congress, senior officials from various Federal agencies, high ranking civilian and military officials of the military departments, and families and friends of the awardees. Immediately after the ceremony, the President greeted each of the more than 300 guests in attendance.

The awardees' savings ideas covered a wide spectrum both in category of effort and dollar amounts, ranging from a 99.5-percent reduction in the cost of testing 2.75-inch rockets to the nearly $5 million savings through elimination of superfluous casings for rockets.

Cost Reduction Week also featured a display of 140 posters on the Pentagon concourse depicting examples of the kinds of relatively simple cost reduction actions that resulted in savings of $914 million in fiscal year 1967 and savings of $1,504 million for the 3-year period, fiscal years 1967–69. (Year-end data available Oct. 11 increased these figures to $1,052 million and $2,059 million, respectively. See table on p. 45.)

Prior to the ceremony, the awardees were guests at a luncheon attended by the Assistant Secretary of Defense (I&L), the Material Secretaries, and the Logistics Chiefs. ☐



The Honorable Graeme C. Bannerman, Assistant Secretary of the Navy (Installations and Logistics), at right, and Mr. O. G. Green, Director, Department of Navy Cost Reduction Program, review the Cost Reduction Exhibit on the Pentagon Concourse.

Mr. Oscar Peay, (right), Defense Personnel Support Center, Philadelphia, Pa., one of the 11 awardees, is congratulated by Congressman William J. Green (Pennsylvania).

The awardees were guests-of-honor at a luncheon held at Headquarters, Defense Supply Agency. The luncheon was attended by the Assistant Secretary of Defense (I&L), the Materiel Secretaries and Logistics Chiefs, and other senior Army, Navy, Air Force, and DSA personnel.

President Johnson presents a Certificate of Merit to Mrs. Yeadis M. Isgar, Navy Electronics Supply Office, Great Lakes, Ill.

Ah, youth! A White House receiving line holds no awe for dainty Diane Hyman who attended the ceremony with her father, Paul Hyman of the OSD staff.

Technical Sergeant Francis D. Moore, U.S. Air Force, currently assigned to the 10th Armament and Electronics Maintenance Squadron, RAF Alconbury, England, receives his Certificate of Merit and congratulations from the President.

Recip

COST REDUC

TSGT Francis D. Moore
USAF, RAF
Alconbury, England

T. Sgt. Francis D. Moore developed a special tool permitting damage-free removal of Pitot static tubes and sleeves from RF–4C aircraft. The former method frequently damaged tubes and sleeves causing replacement of the parts. The new tool saved Air Force $11,064 in fiscal year 1967 and will save $55,544 in fiscal years 1967 through 1969.

Mr. Carlo J. Leto,
U.S. Army Tank-Automotive Command,
Warren, Mich.

Mr. Carlo J. Leto developed a low-cost rifle bracket for vehicle cabs, replacing more expensive brackets and eliminating the need for protective canvas covers for the driver's and assistant driver's rifles. The new bracket saved Army $551,779 in fiscal year 1967 and will save $2,963,807 in fiscal years 1967 through 1969.

Mr. John A. Johnson
U.S. Naval Ammunition
Depot, Crane, Ind.

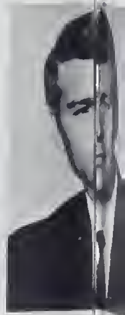
Mr. John A. Johnson found that hoisting lugs packed with MK81 and MK82 low drag bombs were being discarded because, in practice, bombs were loaded onto aircraft by hand or hydraulic lift. The elimination of the lugs in subsequent procurements saved $620,048 for the Navy in fiscal year 1967 and will result in savings of $1,923,048 during fiscal years 1967 through 1969.

Mr. Leonard V. Mares
McClelland AFB, Calif.

Mr. Leonard V. Mares developed a method for using the ordinary 10-cent photo flashbulb to test for reliability on a rocket-firing initiator. The previous method for testing initiators called for actual firing of 2.75-inch practice rockets costing $36 each. The new testing procedure saved the Air Force $51,202 in fiscal year 1967.

Mrs. Yeadis M. Isgar procured recording paper (used for computer printout) directly from the paper vendor instead of the computer manufacturer as had been the practice. The elimination of the middleman reduced cost per carton from $8.39 to $13.50. Navy realized savings of $82,782 in fiscal year 1967. Estimated procurement of 22,462 cartons during fiscal years 1967 through 1968 will result in total savings of $114,780 for the period.

Mrs. Yeadis M. Isgar
Navy Electronics
Supply Office,
Great Lakes, Ill.



Mr. Sper
Oklahon
Tinker

nts of
ION AWARDS

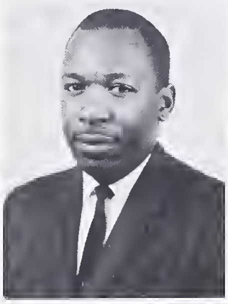
Mr. Ralph J. Pizzello suggested using ventilator plates made of plastic instead of steel to assure air circulation in wood crates for automotive parts. The steel plates cost $1 each; the plastic ones cost 10 cents each. The Army realized savings of $11,556 in fiscal year 1967 from use of the less expensive and more weather resistant plates.

Mr. Ralph J. Pizzello
Tooele Army Depot, Utah

Mr. Jack Doyle developed a simple device for safely handling the 2.75-inch rocket fin. The device eliminated the need for a separate protective casing, thus saving the Air Force $2,785,000 in fiscal year 1967. Total savings in fiscal years 1967 through 1969 are estimated to be $13,530,000.

Mr. Jack Doyle,
U.S. Naval Ammunition
Depot, McAlister, Okla.

Mr. Oscar Peay recommended that cotton jean cloth be used in the manufacture of surgical drapes instead of scarce, more expensive cotton sheeting. The change increased competition in procurement of surgical drapes which decreased unit costs from $26.03 to $15.85. Savings to the Defense Supply Agency amounted to $210,360 on procurement of 20,664 drapes in fiscal year 1967.



Mr. Oscar Peay, DSA,
Defense Personnel
Support Center
Philadelphia, Pa.

2d Lt. Fred M. Lewis enabled the Marine Corps to satisfy an urgent munitions requirement by acquiring excess 90-mm. cartridges from the Army and modifying on-hand quantities of fuzes to fit the ammunition. This action saved the Marine Corps $1,448,000 in fiscal year 1967.

2d Lt. Fred M. Lewis,
Hq., U.S. Marine Corps,
Washington, D.C.

. Albin
AMA,
Okla.

Mr. Ransome G. Holland
Oklahoma City AMA,
Tinker AFB, Okla.

Mr. Spencer K. Albin and Mr. Ransome G. Holland simplified the design of the bracket assembly for the cooling cap of a turbo supercharger, reducing the assembly from a six-piece welded and riveted unit to a single piece unit. The improved design made it possible to procure the item competitively for 72 cents instead of from sole source at $61.24 for the more complicated design. The Air Force in fiscal year 1967 realized savings of $160,101 and will realize savings of $316,363 for fiscal years 1967 through 1969.

"I am very, very proud of those accomplishments"

The President's Remarks of July 27, 1967 Upon Presenting Certificates of Merit for Achievements in the Department of Defense Cost Reduction Program for Fiscal Year 1967.

DEFENSE COST REDUCTION PROGRAM

Secretary McNamara, General Wheeler, Members of the Cabinet, Members of the Congress, distinguished award winners, my friends, ladies and gentlemen:

This ceremony here today honors the supreme importance of the individual's contribution to society.

In 1961, Secretary McNamara pioneered a massive effort in cost reduction in the Government. He set up a 5-year program.

He knew that you cannot cut costs in the budget office—if you don't begin at the workbench. So he enlisted the ingenuity and the initiative of the men and women who work throughout our entire extended defense network around the world.

That program was so successful that when I became President, I asked Secretary McNamara to make it a permanent one.

He set out to save $872 million as his target in fiscal year 1967.

And you men and women of the Defense Department have responded.

Tough-minded decisions have been taken. The savings were not $872 million—but gladly in excess of that, $914 million.

What is more, these same actions will save another $590 million over the next 2 years.

This year alone, the Department of Defense has taken actions which will save the American taxpayer, ultimately, more than a billion and a half dollars.

At my direction, all of the departments and agencies of the United States Government have launched similar programs. We are determined to bring the cost of government down to the lowest possible level.

I think all of you should take a great deal of pride to know that it was all started in your department—in the department with the biggest share of the United States budget.

We all know that it is quite difficult to reduce defense costs during times of peace.

But it is much more difficult to cut those costs when our American men are in battle.

The Defense Department's mission is not to save money. Its mission is peace. Its mission is to safeguard our security. Its mission is to protect our freedoms. We just can't put a price tag on that.

And let no one mistake this Nation's solemn pledge that we have made to our fighting men. They will have every dollar they need to carry out their mission in the defense of our freedom.

As long as I am your President, no one is ever going to measure our soldiers' strength with a bankbook—or limit our soldiers' logistical support by a ledger.

But the fact is that this Department has proved my conviction that we can have combat readiness, good business management, and economy in our defense.

This has been proved, because the men and women who are here today—and thousands of others like them—have taken this challenge as their own.

Here is a steel ventilation plate that is used on certain packing containers. These have cost the taxpayer a dollar apiece.

But steel plates rust and corrode. And so Ralph Pizzello—a packing expert—took a hard look at it. He decided that there must be a better way to make this plate—to do this job.

So he designed a plastic plate to replace that steel plate. It doesn't rust and it doesn't corrode—and it doesn't cost the taxpayer a dollar either. It costs the taxpayer one-tenth of that—just 10 cents. So this little item represents a 90 percent gain in efficiency and in economy.

This is only one very vivid and practical example out of many. We think all of them are creative improvements and reductions in the cost of protecting our freedom.

I am very, very proud of those accomplishments.

They represent the true genius of this Nation—they represent the determination of the individual to use his own God-given talents and all of his resources for the benefit of all of our people.

It gives me a great deal of pleasure to welcome you here to the East Room today and to personally acknowledge and reward and thank you for this leadership—and this substantial contribution to your country.

TRUTH IN NEGOTIATIONS

Public Law 87–653

By **MAURICE L. PARADIS***

The Hour Is Late

Last year I had several opportunities to comment publicly on Public Law 87–653—The Truth in Negotiations Act. On each occasion I observed that the time for philosophical discussion was practically gone, that our problems were real, that each reported failure was a gong sounding the need for more of something. Perhaps the need was for more data, perhaps for more audit, perhaps for more surveillance, perhaps for more vigorous enforcement, perhaps for even arbitrary standards. One thing was certain: the Department of Defense had no alternative but to do what it could to achieve the objectives of The Truth in Negotiations Act.

A year has flown by and—of late—the press and the Congress have been less than kind to the Defense contracting process. I refer to statements such as these:

> "Contractors coddled."
>
> "The Pentagon's lax administration of the Truth in Negotiations Act . . . is costing the taxpayers billions of dollars in overcharges on Defense contracts."
>
> "PL 87–653 . . . is the taxpayers' only defense against establishment of unreasonably high cost levels in negotiated contracts."
>
> "The Comptroller General has reported . . . there has been overpricing of more than $130 million during a 10-year period."

And so it has been, with charge following charge following charge. It is late in the day and words and thoughts must be reflected in action. Contemplation must be replaced by reality.

In fact, the more we delay, the more we continue to "spar" over the meaning of words, particularly when their basic intent and purpose are manifestly clear to all concerned, the more will we put a straitjacket on those areas which can be properly implemented only by reliance on the rule of reason and the more we will encourage the imposition of arbitrary rules and standards. Hard cases can still make bad law.

Essentials of the Law

The Truth in Negotiations Act has the following essential requirements: First, that law deals only with noncompetitive negotiated contracts, subcontracts, and modifications in excess of $100,000. Next, it provides that before any of those contracts are awarded, the contractor shall be required to submit cost or pricing data and to certify that the data is accurate, complete, and current. Finally, it requires that the contract contain a clause enabling the Government to adjust the price if it is determined that it was significantly increased because any of the data was not accurate, complete, and current.

There are two very fundamental and basic concepts that underlie this law. The first is that the law was passed for the benefit of the Government and *not* the contractor. Second, the law must be implemented in such a way as to be effective. These two ideas should be kept in mind throughout this article.

---

*When this article was submitted to the Journal, the author was the Defense Supply Agency's Legal Member of the Armed Services Procurement Regulation Committee. He has since resigned his Government position to join the legal staff of Lockheed Aircraft Corporation.

The Contractor's Obligation

Industry has always been concerned with the "how much" of data and some have alleged that the only reasonable approach to this law is to have the contracting officer tell the contractor what specific data he wants on an item-by-item basis. Otherwise, they say, the contractor will have to use freight cars to deliver his data. We have always considered that an exaggeration, but it is much more. It involves a serious misconception of the law. Let us remember clearly that we are talking about the contractor's proposal. It is his offer, computed and prepared by him, based on his plans, his personnel, his costs. He is the one who knows what his historical costs are; he is the one who knows what his quotes are; he is the one who knows what there is in his operation which can significantly affect costs. The idea that the contractor's only obligation under the law is to submit only that specific data which is specifically requested, is to misconstrue that law. The burden of submitting accurate, complete, and current cost or pricing data is on the contractor. Of course, the contracting officer does have a responsibility to negotiate reasonable prices and the law is intended to help him in that effort. If he sees the need for more data, or for corrected data, he should ask for it. But the contractor has no right to rely on that obligation of the contracting officer to absolve himself from the responsibility to submit accurate, complete, and current cost or pricing data.

Rule of Reason

This obligation of the contractor to submit complete cost or pricing data is not an unreasonable burden. Although in some select procurements the data will be quite voluminous, we are not normally talking about freight cars full of data. After all, the contractor is required to submit only that data which is reasonably available and which can reasonably be expected to have an effect on price negotiations. Nevertheless, the concept of reasonable availability has been troublesome and needs some discussion. There are two basic views, each of which stems from a particular facet of Public Law 87–653. The first goes like this. Public Law 87–653 is not a criminal statute. Its defective pricing provision does not depend upon an evil mind nor dishonest purpose. It does not depend upon acts of bad faith. The defective pricing provisions of the law turn on facts pure and simple. The contractor has the obligation of doing what he reasonably can to submit proper data. However, if he fails and his failure is innocent, he is not going to be branded, tarred and feathered, or run out of town.

Reconciling Views of "Availability"

Let us assume that in complete keeping with the rule of reason, the contractor submitted cost or pricing data which represented all that was reasonably available to him. Let us assume that he negotiated on the basis of those facts, himself fully and completely relying on their accuracy, completeness, and currency. Let us assume that in a $2 million contract, those facts represented that a particular black box would cost $1 million. Let us assume further that on the very day of agreement on price, but before the parties shook hands, it was established as a fact within his organization that the black box would cost only $500,000. Both parties quite innocently negotiated from incomplete facts. As a consequence both parties quite innocently agreed to a price that was inflated by $500,000.

Now, doesn't the law say that under those circumstances the contract price should be adjusted? Isn't that precisely what this is all about? Has not the Congress said that in those circumstances the contractor should not realize such a windfall? By what legal or moral right should the contractor retain such a windfall? I believe that the law says he should not, and I believe that such a result is reasonable.

But, that is not the end of the story. It is the second view that the law says more. It provides that cost or pricing data has to be accurate, complete, and current as of a date agreed upon by the parties, which date should be as close to the date of agreement on price as is practicable. The second says that, therefore, there can be no defective pricing unless the necessary data was in fact reasonably available to the contractor.

Are these two views reconcilable? I believe they are.

They can be married into a third view which would agree that data must have been reasonably available to the contractor in order to support a defective pricing action. But this third view would distinguish between different types and classes of data. It would recognize that certain data such as overhead expenses and production records may not be reasonably available except on normal periodic closing dates. It would recognize that numerous minor material items might be reasonably available only as of cutoff dates considerably prior to the date of agreement on price. The sheer volume of such minor transactions could well make the use of any later date impracticable and, in all probability, the net effect of any price changes for such minor items would be insignificant. However, this view would also recognize that significant matters, such as changes in the labor base or in the prices of major material items, are as important to management as they are to the Government and the related data would be expected to be current on the date of agreement on price and therefore would be treated as reasonably available on that date. Although we recognize that changes in the labor base or in the prices of major material items are generally significant matters, no hard and fast rule can be laid down. What is significant is a question of judgment, one which I do not believe can be defined effectively except by the use of completely arbitrary standards—standards which would have no necessary relationship to the actual facts of any given case.

Experience under Public Law 87–653 tends to show that difficulties can be expected when reliance is placed on general understanding for the meaning of common words of judgment such as *substantial* and *adequate* and of other common words such as *complete*, *submit*, and *specific*. Nevertheless, I continue to believe that reason will prevail and that we should await experience before resorting to arbitrary definitions.

Available to Whom?

There is another troublesome element in the concept of reasonable availability and that is—to whom must it be available? There are those in industry who maintain that such availability should be limited to their negotiator at the negotiating table. We cannot live with such a rule. It would render the law practically ineffective. The contractor, as a sound and prudent businessman wholly apart from the Government, should take all reasonable measures to insure that his negotiators have information as current and complete as possible. That, after all, is the rule of reason. We are prepared to recognize reasonable availability to the contractor and to recognize degrees in that availability. In addition, it has been suggested that we should make changes in our certificate in order to make it expressly clear that the contractor should have a period of time, after the date of agreement on price, and before execution of the certificate, to assure himself that all the data he submitted was accurate, complete, and current. I believe that suggestion has merit.

Law and Total Pricing Compatible

Now a few words about what has come to be known as the natural and probable consequences theory.

Long before the enactment of Public Law 87–653, the Department of Defense, in the negotiation of its contracts, followed a theory of pricing known as total pricing. The idea is very simple and in fact quite fundamental. It turns on the proposition that separate negotiation and agreement on price for each different element making up a proposal leads to higher prices and is not a sound pricing method. Under total pricing each of the elements involved may be examined and looked into; in fact, many of them are the subject of negotiation but each one of them is not the subject of independent pricing. When the contracting officer is satisfied with the proposal submitted by the contractor or when he feels that further discussion of individual elements would be fruitless, he sits down and negotiates a total price for the entire job. This actually enables both parties to negotiate more effectively. It enables them to make trade-offs without specifically identifying which elements have been reduced or are in fact involved.

There are many who felt, and there are many who feel today, that 87–653 is the beginning of the end for total pricing. They look upon the two as completely incompatible. If 87–653 requires the submission of cost or pricing data on all the various elements making up the contractor's proposal and if, in order to adjust prices because of defective data, it is necessary to show that the contract price was increased by a significant sum because of that defective data, the question is asked, "How can total pricing subsist?" How can we continue to price on a basis which does not involve the pricing of individual elements and at the same time hold out a right to adjust the prices because of defective data submitted on individual elements?

To answer that, we must have a clear understanding of the purpose of cost or pricing data. Cost or pricing data is submitted in order to support the contractor's proposal. And by "support the proposal," I mean it is the factual base from which his estimates, his projections, and his learning curves stem. This data is examined by the contracting officer; it may be part of an audit report, it may play an important part in the price analyst's report but, normally, it is not the subject of hard bargaining. It is not the subject over which important trade-offs are made. There may be instances where the contractor and the contracting officer do not agree on what the facts are, but generally they are rare. They may often disagree about the interpretation of the facts and the conclusions that should be drawn from those facts, but not often about the facts themselves. It is our position that the contracting officer, the price analyst, the auditor, and any one of the technical representatives of the contracting officer who have occasion to examine or consider the contractor's cost or pricing data must make any defect they find in that data a matter of record. The fact that such data is considered defective must be brought to the specific attention of the contractor. At that point the contractor is free to correct the data or to point out why he does not consider it defective. It is the contracting officer's responsibility to record all these things in his memorandum of negotiation.

Defective Data Could Cut Price

What does all this mean? Quite simply it means this: The contractor knows that he is submitting cost or pricing data to support his proposal. He knows that, in the very nature of things, facts are easier to prove or disprove than are judgments. He therefore knows that the contracting officer will question his facts before he starts arguing about the projections, the estimates, and the learning curves. He should then consider that the contracting officer has relied on any data he has not expressly questioned. Therefore, we consider it perfectly proper to say that, in the absence of evidence to the contrary, the natural and probable consequence of defective data is an increase in the contract price in the amount of the defect plus burden and profit or fee, and therefore, unless there is a clear indication that the defective data was not used or was not relied upon, the contract price should be reduced in that amount.

We do not deny that the Government has the burden of proving that submitted data was inaccurate, incomplete, or noncurrent, and we do not deny that the contractor is presumed to have submitted accurate, complete and current data until the Government proves otherwise. Once the Government has done that however, unless there is evidence to the contrary, it will be assumed that the parties did what was natural. Public Law 87–653 and total pricing can live together.

The Question of Reciprocal Disclosure

This is a good point in these discussions to ask the question, "Why does not the contracting officer furnish the contractor with a copy of the audit report and the findings of technical representatives, the administrative contracting officer and the price analyst, together with excerpts from the negotiation memorandum?" Although these matters are now under active consideration, I would like to make a few observations. I believe the contractor should look after his own affairs and that he as a prudent businessman should maintain a record of the cost or pricing data he submitted to the contracting officer or his representative. He knows that he will be advised of any defects found in his data and that reliance on this data is normal. But regardless of all that, the issue of reliance becomes truly significant only when the contracting officer, after contract award, seeks to adjust the contract price because of defective data. At that point in time, the reasons against complete contractor access should, in my opinion, be very limited and ultimately no greater than they would be under an appeal before the Armed Services Board of Contract Appeals (ASBCA).

Turnabout Price Adjustment—The Equities

Let us talk for a few minutes now about another aspect which has been of much industry concern, that of set-offs. This problem has been put in many ways, some more incisively than others, but all touching. Essentially, however, the point is: If the Government can decrease the price because data, honestly and in good faith submitted, caused the price to be higher than it should, why does it not increase the price because data, honestly and in good faith submitted, caused a decrease in the price? The quickest and simplest answer is: That is the law. However, I concede that on this, as on many another matter affecting the interests of opposing parties, all lawyers may not agree. Nevertheless, it does reflect the consistent position of the Department of Defense and now that the same view has been taken by the ASBCA as a matter of statutory interpretation, a suspicion that no great changes are likely would not really surprise me. Wholly apart from the legal argument, however, we are generally opposed to set-offs. Despite admitted arguments of abstract equity, we recognize that, in the real world, the contractor is the one who has, controls, and understands all the data within his organization. The contracting officer, negotiator, buyer, price analyst, and auditor are outsiders and are alien to that data. If turnabout is still fair play, let me say that for every error we may happen to find in the contractor's data, he can find a carfull. Remember also that the law was passed for the Government's benefit, not that of the contractor. Insofar as contractor data was concerned, Congress considered the Government the weaker party. The Congress was right, and the general recognition of set-offs would tend to destroy the effectiveness of that law.

Favorable vs. Unfavorable Data Defects

Be all that as it may, we wrestled with the problem of set-offs long before the ASBCA decisions. We felt that regardless of what our position might be, it should be expressed in the ASPR. We proposed that the ASPR adopt the "inextricably interconnected" theory. That is, we proposed a general rule against set-offs but recognized, as an exception to that rule, the case where defective data causing decreases was so inextricably interconnected with defective data causing increases that it would be impractical to consider one without the other and we cited errors in an overhead account as an example.

However, we may not have captured what we were trying to say. The words may not quite convey the extent to which exceptions to the general rule were intended to be allowed, especially since things which are inextricably interconnected truly cannot be separated and therefore do not involve set-offs. It would perhaps be more helpful, more realistic, if we were to retain the general rule against set-offs, drop the words "inextricably interconnected" and go on to say that where there is a question as to the accuracy of a single item of data which is an average or composite rate, overstatements in making up that rate may be set off by understatements for the purpose of correcting the rates submitted by the contractor.

For example, when the contractor in his cost or pricing data, submits an average rate for Class A engineers and it is found that in the computation of the average rate the contractor has indicated that his highest price Class A engineer was $20,000 when in fact it was only $18,000 and, further, where the contractor indicated that the price of his lowest paid Class A engineer was $10,000 when in fact it was $12,000, these can be off-set, one against the other, in recomputing the average or composite rate. We would go on to say, however, that offsetting a Class A engineer average or composite against a Class B engineer average or composite would not be permitted.

In addition, as a further exception to the general rule against set-off, overstated data (such as unit price) relating to an item (such as cement) may be offset by understated data (such as quantity) relating to the same item. For example, if the historical data submitted is 100 feet of pipe at $1 a foot for a total of $100 but it should have been 50 feet at $2 a foot, set-off could be permitted and no price adjustment required. We would make it clear, however, that in any case the contract price could be adjusted only if the net adjustment is down. Decisions on these matters may be expected soon.

Prime's Accountability for Subcontractor Data

The last problem on my hit parade deals with the extent to which a prime contractor should be accountable for subcontractor data. It is perhaps the most important of the problems I have discussed and it is certainly difficult.

Under noncompetitive, negotiated, firm-fixed price contracts subject to the law, the prime contractor generally agrees on a prime contract price with the contracting officer before he has firm agreements on price with his potential subcontractors. But he is required to get a subcontract certificate only prior to the award of the subcontract and some say that under the law the Government can decrease the prime contract price because of subcontractor data only if that data was not as certified by the subcontractor.

If we agree on price with the prime contractor before he gets a certificate from his subcontractor, can we ever show that the prime contract price was increased because the data was not as represented in that after acquired subcontractor certificate? We can, if prime, in fact, ends up by making an award to the potential subcontractor who furnished the data he submitted with his proposal and if the subcontractor data contained in that prime proposal was not changed by the subcontractor in the time interval between the Government's agreement on prime price and the prime's agreement on subcontractor price.

It is conceivable that we can adjust the prime price even if the subcontractor changes that data because, literally read, the law says that we can adjust the prime contract price if, and I quote, ". . . any subcontractor required to furnish such a certificate furnished cost or pricing data which was inaccurate, incomplete, or noncurrent." Literally it does not say that the certificate has to be wrong; for that matter it does not even say that the certificate has to exist.

If the law is not so literally read, can it be defeated by the simple expedient of the prime awarding his subcontracts to other than those reflected as possible subcontractors in his proposal? Since the law speaks only of adjusting the prime contract price, must the contractor, in order to protect himself, actually firm up his subcontract prices and get subcontractor certificates before he executes his own certificate? If he does not, does the data he obtained from his potential subcontractors become his own contractor data rather than subcontractor data, and therefore subject to his certification? And if so, how does he assure himself of its accuracy, completeness, and currency? Will merely potential subcontractors allow potential primes to come rummaging through their books? These are only some of the questions presented by this issue.

On the 9th of June we circulated for comment a proposal that would have solved most of those problems quite simply and, we felt, realistically. We proposed that if the prime gave us all the data he obtained from his potential subs and if that data were not defective in the light of other data the prime himself possessed, the prime price would not be subject to adjustment even though the data as furnished by the potential sub was, for example, not complete.

Even that approach was not without problems. For example, and quite significantly, it would provide the prime contractor with a disincentive to early hard bargaining with his potential subs. He could, in fact, realize a windfall by deferring hard bargaining until after the Government agreed with him on the prime contract price.

The General Accounting Office has taken a dim view of that June 9 proposal. It is our opinion that this issue should be definitively resolved, and that this resolution also, regardless of what it may be, should be reflected in the ASPR. It will not be enough to leave the book as it is. It seems to me that if our June 9 approach is not adopted, we will have to say that the prime contractor is himself responsible for the accuracy, completeness, and currency of all the data he submitted, regardless of its source and regardless of whether that source ultimately receives a subcontract. This is indeed a knotty problem.

A Closing Thought

Let me close with this thought—Public Law 87–653 is a load designed to be carried by two—industry and Government. We in the Government can write, rewrite, and clarify our regulations; we can run extensive education programs for our people throughout the country but, in the final analysis, it will all go for naught unless the contractor meaningfully submits accurate, complete, and current cost or pricing data.

In late September, the General Accounting Office testified before a subcommittee of the House Armed Services Committee that in 104 of its reports issued since January 1966, 451 examples of various deficiencies were reported; 357 of these dealt with defects in contractor submission of cost or pricing data. Do we heed the clarion call or do we wait for the bells to toll? □

New challenges must be faced and met by DECCO as man increases his explorations of space. This sketch illustrates the need for rapid expansion of telecommunications technology to keep pace with future advances in space such as orbiting laboratories and man-on-the-moon projects. (Sketch courtesy of Astro-Electronics Div., Radio Corp. of America.)

Bulk Leasing—

THE TELPAK STORY

By **RENATO TRAMONTANO**

Directorate for Telecommunications Policy, Office of the Assistant Secretary of Defense (I&L)

Bulk Leasing of Long Distance Lines Not Only Saved $285 Million in 5 Years But Made Defense Communications More Effective.

The Defense Commercial Communications Office (DECCO) cut certain communication costs by as much as 90 percent by leasing telecommunications services on a "Buy Wholesale" basis. This bulk leasing technique enabled DECCO to take advantage of the management principles of consolidation, centralization, quantity procurement, and automation.

Telecommunications include:

1. Telephone, telegraph, and data circuits.
2. Satellite communications.
3. Radio, radar, and navigational aids.
4. Microwave, tropospheric scatter, cable, and landline systems.
5. Electronic countermeasures equipment.
6. Cryptologic and telemetry systems.
7. Television and display facilities.

The author gratefully acknowledges the assistance of Col. B. U. Glettler, Chief of DECCO, and his staff, particularly Mr. Glenn Boyer, for their invaluable contribution.

Telpak, the Economy Sized Package

Why pay $2 or $3 a mile for communications leased lines when they can be had for $0.26 a mile? To get this reduced rate, simply lump as many leased long line requirements as possible into a package, called TELPAK by the commercial carriers.

For instance, suppose the Army needs 12 lines between Washington, D.C., and New York City, the Navy needs 12, and the Air Force needs 12. Bought separately, each service must pay high rates for each line. However, by lumping them into a TELPAK the services can get lower rates.

One also sees immediately the advantages of having a central manager, DECCO, to help plan and develop the groupings of communications requirements into "bundles" big enough for such bulk procurement. The tables in this article show some of the details of the systems and the savings obtained. Let's look at these details and their implications more closely.

TELPAK's currently come in four "sizes" called schedules. Schedules A and B are offered only by some intrastate carriers.

TABLE 1

Schedules	*Voice Circuit capacity*	*Cost per mile*
TELPAK A*.	12	$15
TELPAK B*.	24	20
TELPAK C.	60	25
TELPAK D.	240	45

*Intrastate only.

The author is shown using an ESTERLINE ANGUS 20 PEN RECORDER—which tells how much use TELPAK-leased trunks receive in the AUTOVON network.

Obviously, an organization that needs only eight interstate circuits would not buy a TELPAK. However, if that organization could combine its needs with those of another to make the "quantum jump" into 13 circuits or more, then the savings of a TELPAK become available.

Schedule A TELPAK, the smallest, contains up to 12 voice circuits. However, these circuits can be replaced by 144 telegraph circuits, or 48 or more data circuits, or one wideband service, or any combination of circuits that equals 12 voice channels or less.

Schedule D TELPAK, which costs $45 per mile, contains up to 240 voice circuits, or 2,880 telegraph circuits, or a combination of voice, telegraph, data and video circuits providing the 240 voice channel capacity is not exceeded. The largest part of the DECCO network is made up of D TELPAKs.

Whenever possible, every circuit ordered in the United States by DECCO from commercial carriers is routed in TELPAK. Often a circuit must be priced partly on an individual basis; this is called an Interexchange Service (IXC). When a circuit cannot be accommodated fully in TELPAK, DECCO has the IXC mileage flagged by its computer. This mileage is reviewed each month to see if further TELPAK applications are possible. So far, DECCO has been able to apply TELPAK savings to some 87 percent of CONUS circuits.

Cross-Agency Telpaking

The TELPAK tariff specifies that only one agency will issue the contracting order for a TELPAK to the commercial carrier. However, the tariff permits more than one U.S. Government agency to participate on a shared basis.

Other Federal Government agencies have observed with increasing interest DECCO's success in reducing DoD's costs for leased commercial communications. Late in 1962, the Bureau of the Budget (BoB), the Department of Defense (DoD), and the General Services Administration (GSA) agreed that DECCO would lease private line circuits for the Federal Aviation Administration (FAA). During the first year of operation FAA was reported to have had savings of about $2 million.

TABLE 2

Schedule	*January 1963*	*January 1965*	*January 1967*	*July 31, 1967*
TELPAK A.	136	240	329	323
TELPAK B.	125	189	208	220
TELPAK C.	150	379	412	401
TELPAK D.	122	638	1, 132	1, 307
Total.	533	1, 451	2, 081	2, 251

Shortly thereafter, the GSA arranged to share TELPAK's whenever it is to the advantage of both DoD and other Government agencies. The carrier simply splits the billing between the DoD and GSA according to a designated percentage.

As table 2 shows, the TELPAK networks have quadrupled since 1963.

The D TELPAK provides the most economical pricing and the greatest savings on a per-mile basis.

Table 3 reflects savings earned through bulk procurement. The activation and expansion of many of the DoD communications systems such as AUTOVON (Automatic Voice Network) and AUTODIN (Automatic Digital Network) have more than quadrupled the TELPAK circuit mileage since 1963, while the monthly cost has only slightly more than doubled.

TABLE 3

Year	*Miles voice and telegraph*	*Monthly cost*
January 1963	3, 227, 790	$1, 372, 385. 00
January 1965	8, 843, 494	2, 245, 089. 00
January 1967	12, 782, 061	2, 873, 703. 59
July 31, 1967	13, 130, 846	2, 872, 311. 55

Without bulk offering, the monthly cost of DoD for the same services would have increased by $19 million.

Table 4 shows the continuing reduction of the cost of DoD circuits per unit of mileage in DECCO TELPAKs. In 1963, DECCO paid an average of 49 cents a mile for a voice channel and 4 cents a mile for a telegraph channel. In 1967, the average cost for a voice channel is 26 cents per mile and 2 cents per mile for a telegraph channel.

TABLE 4

	January 1963	*January 1964*	*January 1965*	*January 1967*
Voice	$0. 49	$0. 39	$0. 29	$0. 26
Telegraph	. 04	. 03	. 02	. 02

That DECCO customers are aware of the advantages of TELPAK is shown by the fact that they expressed concern about the tariff revision of August 1, 1967. The revision eliminated Schedules A and B interstate TELPAK's, allowed an increase in rates for IXC mileage; and changed the service terminal charges. Except for one Schedule A TELPAK with an independent carrier, the A and B schedules are now intrastate services with the Associate Bell Telephone Companies. The effect that the TELPAK tariff revision has had on communications costs for the DoD is shown in table 5.

TABLE 5

	A	*B*	*C*	*D*	*Total*	*Monthly cost*
July 31, 1967	323	220	401	1, 307	2, 251	$2, 872, 311. 55
Aug. 1, 1967	48	23	792	1, 323	2, 186	2, 913, 024. 55

TELPAK	+$40, 713
IXC	+72, 377
Service terminals	−21, 646
	91, 444

Following the tariff revision, DECCO found it more economical to upgrade most of the scheduled A and B TELPAK's to Schedule C TELPAK's. This revision increased the total TELPAK costs by approximately $40,000 a month, increased the IXC costs by $72,000 a month, and decreased terminal service costs by $21,000 a month. In summary, the change in the tariff rate cost the DoD an additional $91,000 per month.

Validated savings for fiscal years 1962 through 1966 are as follows:

Fiscal years:	
1962	$7, 500, 000
1963	15, 889, 726
1964	58, 200, 000
1965	89, 400, 000
1966	114, 800, 000

Under the new reporting criteria of the Cost Reduction Program, DECCO's reportable cost reductions for fiscal year 1967 were $1,202,400. The DECCO goal for 1968 TELPAK savings is $2,000,000.

Cost Reduction Potential of DECCO

The use of TELPAK's alone would justify the existence of the Defense Commercial Communications Office. However, there were and are other reasons for the development of DECCO. To understand these, let's review its history briefly.

In the late 1950's the U.S. Air Force conceived and developed the huge SAGE (Semi-Automatic Ground Environment) network, an intricate radar early warning, fighter, and missile control system guarding the North American frontier. The communications requirements were a challenge to the ingenuity and productivity of both the military departments and the communications industry. The biggest question was: "Where are the communications equipment and skills to tie these widely dispersed operations to a single directing agency?"

For an answer, Air Defense Command (ADC) turned to the telecommunications industry—to the common carriers who were providing leased communications services to the military departments. The industry was prepared to develop the equipment and manpower skills; it already had much of the long lines in place;

and it did not have the military services' ever-present problem of skill retention.

As part of the Air Defense Command's continuing effort to improve its management of communications leasing, an office was formed to act as central agent for SAGE leasing transactions. This new office took three important steps which laid the groundwork for both the cost reductions in leased communications and for the eventual formation of DECCO.

1. Communications costs analysts were employed to negotiate costs with the commercial carriers for the construction of SAGE facilities.
2. Contracting, accounting, and disbursing functions were automated.
3. SAGE communications requirements were routed for maximum bulk rates under the Multiple Channel Tariff offered by the commercial carriers. For example, if the Air Defense Command leased three voice and three telegraph circuits between Washington and New York City, all circuits would be priced at normal rates. However, when a fourth voice circuit was added by the ADC between the same two points, that circuit would be priced at about 10 percent less than each of the other voice circuits. The cost of the original circuits remained the same, but additional circuits could be added at progressively reduced costs.

The success with which this ADC office reduced the cost of telecommunications for the SAGE program and reduced the management overhead costs for both ADC and the commercial carriers influenced ADC to centralize all of its leased communications activities at Colorado Springs, Colorado). This consolidation created a single leasing office large enough to exploit the Multiple Channel Tariff rates of the communications carriers.

In 1960, the Air Defense Centralized Leasing Activity was placed under the jurisdiction of Air Force Airways Communications Service to become the nucleus of an Air Force-wide manager for long lines communications leasing. The Air Force Wide Leasing Activity became known as the Office of Commercial Communications Management and in late 1961 was moved to Scott, Air Force Base, Ill., as a staff element of the newly created Air Force Communications Service (AFCS).

A DoD study determined that there should be a central point for leasing private line circuits for all elements of DoD, and designated OCCM as the interim activity to perform the function. On December 31, 1962, OCCM was redesignated as the Defense Commercial Communications Office (DECCO) and became an activity of the Defense Communications Agency (DCA). This reorganization established DECCO as the DoD commercial lease manager.

DECCO now is responsible for DoD leased services in the United States, Hawaii, and Canada and for international circuits emanating from the United States and its possessions. DECCO leases circuits in transoceanic cables to Hawaii, Guam, the Philippine Islands, Japan, Europe, and the Caribbean. It is also responsible for procuring satellite circuits, of which more than 40 are now serving DoD.

DECCO—Pacific

Centralized management of commercial communications leasing was introduced to the Pacific area with the establishment of the DECCO Pacific office in October 1966. Since its activation, DECCO PAC has reported $300,000 in cost reduction. The cost reductions are attributable to automation, reduced manpower requirements, and consolidated procurement.

Effective early in 1968, the Government-owned on-island trunking network in Hawaii will be transferred to the local communications carrier and the Government will lease needed services as required through DECCO PAC. Substantial cost reduction in manpower and operating funds, as well as improved service, may be expected from this action. A cost comparison study is being conducted to determine the cost effectiveness of transferring Government-owned base, camp, and station private branch exchanges and other telephone facilities in Hawaii to the commercial carrier for operation and maintenance.

Improved Management Equals Cost Reductions

Centralization has led to greater cooperation and understanding between DECCO and the communications industry. DECCO has initiated administrative practices and procedures that have resulted in savings for industry and which have, in part, been reverted to the Government in the form of reduced rates, or cost savings. DECCO's centralized management and industry's cooperation have made significant cost reductions in leased communications services. Involved in the management and negotiation for the leased services are over 300 franchised communications carriers, Federal and State regulatory agencies, and approximately 25

The Bell System's cable ship, Long Lines, was designed to carry out extensive expansion of deep-sea communications facilities needed for improvement of both commercial and Defense communication networks. Last year this ship placed over 10,400 nautical miles of ocean telephone cable in support of these systems.

Shown above is the status center at "Switchman," for the Automatic Voice Network (AUTOVON) which automatically controls and routes calls processed through the switched voice network of the DoD communications system.

customers, subcommands of the DoD, with varied defense missions.

DECCO today is computer-oriented. Processing a customer's request for a service or for a change in service has been reduced to a simple Inquiry/Quota/Order cycle. The Inquiry is DECCO's request for bids; the Quote is industry's response; and the Order is the contracting action. Behind this cycle are the basic agreements with the carriers. A customer's requirement is procured by the issuance of a Communications Service Authorization (CSA) against a Basic Agreement which had previously been negotiated with the carrier providing the service. Financial data are established automatically by the computer using the inservice dates of CSA's printed by the computer. Currently, 260,000 records are maintained in the computer's financial master file. Validation of bills, also a computer operation, has had a definite bearing on cost reduction. In the past, 30 days would elapse between the time when a bill was received and the date when it was paid. Automation has reduced the processing time to 2 days. DECCO administers over 55,000 accounts for which separate bills are received each month. Almost 25,000 of these bills are submitted on punchcards. When the information on these cards matches the account payable information on file in the computer, payment is authorized automatically. Ninety-eight percent of such bills received by DECCO are paid automatically.

The advantage to industry of rapid payment is obvious. Less obvious, but even more important to the Government, are the savings that accrue as a result of prompt payment. Vital working capital is quickly returned to industry whose overhead costs are thereby reduced. Since FCC governs the industry's profit, such cost reduction is returned in part through rate reductions.

Specialization has also permitted DECCO to provide pertinent data and testimony to support the Government's position in the rate reduction hearings before the FCC. DECCO negotiates directly with the carriers for rate reductions or initiates action through DCA for investigation by the FCC and state regulatory bodies. Substantial cost savings have resulted from such actions.

DECCO's growth has not been accompanied by a corresponding increase in manpower and support costs. Instead, the number of operating personnel has actually decreased from a high of 298 to the present 268 and during fiscal year 1967 a reduction of $35,000 in overtime costs was effected!

DECCO's Future

Improving communications leasing operations and reducing costs are continuing DECCO goals. So far, DECCO has met the challenges of rapidly expanding technology, and has effectively applied central management of communications leasing to provide impressive cost savings.

Looking to the future one can see at least two vital areas for further cost reductions: (1) New or improved methods of leasing communications services, and (2) ever increasing applications of computers and other automation devices to telecommunications services.

Our long lines will get longer and our information processing more extensive and complex. When we put men on the moon or in orbiting laboratories, we will have to communicate with them. DECCO will help expedite, facilitate, and reduce the costs of these and other—standard or exotic—telecommunications. □

notes from the... director's desk

Readers with a yen for more nuts-and-bolts knowhow in cost reduction management have asked the JOURNAL to regularly feature informal comment on new developments, guidance and instructions. The JOURNAL is happy to oblige. The following notes were provided by Harrell B. Altizer, Director for Cost Reduction Policy, Office of the Assistant Secretary of Defense (Installations and Logistics).

MOTIVATION. Something all supervisors should remember -- nothing rewards ingenuity better than a "thank you" from the boss. As a matter of fact, the sincere interest and appreciation of a supervisor may be the only incentive an employee has for future ingenuity. So don't forget, if someone develops, implements, and reports a good cost reduction action, let him know that his ingenuity is appreciated.

WATCH FOR NEW COST REDUCTION FILM. Effective information and training programs at all levels can play an important role in engendering and maintaining continued interest in and support of the Defense Cost Reduction Program. It is a command responsibility to publicize the program and assure its sustained support. As an aid to commanders and their cost reduction coordinators in this effort, OSD has arranged for preparation of a 15-minute, 16mm film entitled, "So What's New -- In Ideas?". This film will be available through Audio-Visual Communications Centers (Film Exchanges) early in January. The motion picture is designed to stimulate the viewer toward thinking up new and better ways to carry out his day-to-day assignments and conduct Defense operations more efficiently. It encourages DoD personnel to put their ideas into action by showing actual examples of how other employees, much like themselves, have come up with sound solutions to perplexing problems and saved their installation's funds in the process. The movie is made up of four sequences, one from each Department and DSA, and was filmed "on location" where the ideas were originated. Each sequence depicts the originators as they re-enact the successive steps of their individual cost reduction actions from isolation of the problem through conception and development of their ideas, and, finally, putting them to effective use. This film represents a pilot effort, and current plans call for additional films of the same type to be issued, periodically, in the future. (If you have trouble obtaining a copy of the film for your organization, call the Contributing Editor for your Department whose name and phone number is listed on the inside cover of the Journal.)

notes from the... director's desk

WORTH REPEATING. Some things are worth repeating especially when additional evidence shows up to further emphasize an earlier point. In the last issue, our "notes" included an item on the importance of reporting savings when they occur. The item was based on our observations over the past five years that relatively few cost reduction actions get reported in the first quarter. The level increases somewhat in the second quarter and a little more in the third quarter. When the fourth quarter comes around, reports flow in by the bushel. Again this past year reporting followed the usual pattern with the fourth quarter report volume greater than that of the other three quarters combined. Consequently, we feel justified in repeating again our previous request that actions be reported on a timely basis in the quarter in which they occur so as to even out the workload all along the line and at the same time obtain a more realistic picture of the true status of the program.

DOCUMENTATION NEEDS IMPROVEMENT. Our review of documentation supporting various cost reduction actions reminds one of the old story of Goldilocks sampling the porridge -- one bowl too hot, one too cold, and one just right. Some actions are supported by multifarious pages of general information which not only add unnecessary bulk to reports but omit the essential information needed for either program or audit level approval of the action. Other actions go to the other extreme and offer simply a single line statement or the very bland comment: "self-explanatory". Fortunately, the bulk of reports are complete as to description of the action and other essential details and are therefore "just right". However, there are enough of the other kinds to justify a request that greater attention be given to this aspect of reporting so that good actions do not become lost to the program and to your credit because of insufficient or improper documentation. Aware that there are two sides to every coin, we have made a special effort to improve our instructions and reporting formats so as to provide a clearer understanding of what is required in the way of documentation. With everyone giving closer attention to this problem it should quickly become resolved to the mutual advantage of all concerned.

DEPARTMENT OF DEFENSE COST REDUCTION PROGRAM
SUMMARY OF SAVINGS FROM FY 1967 ACTIONS
(In Millions of Dollars)

Summary By Area	Realized Savings Goal	 FY 1967	Estimated Savings FY 1968	 FY 1969	Total Savings FY 67-69	 Goal
I. BUYING ONLY WHAT WE NEED						
A. Refining Requirements Calculations						
1. Major Items of Equipment	$ 110	$ 136	$ 58	$ 2	$ 196	$ 203
2. Initial Provisioning	20	31	21	9	61	40
3. Secondary Items	45	110	7	6	123	56
4. Technical Manuals	4	2	-	1	3	6
5. Technical Data and Reports	7	10	2	3	15	10
6. Industrial Production Base	4	4	-	-	4	4
B. Utilization of Long Supply & Excess Inventory						
1. Equipment and Supplies	37	49	11	2	62	51
2. Idle Production Plant Equip.	1	-	-	-	-	1
3. Excess Contractor Inventory	2	1	-	-	1	2
C. Eliminating Goldplating	300	339	161	109	609	419
D. Inventory Item Reduction	4	3	-	-	3	4
Total Buying Only What We Need	$ 534	$ 685	$ 260	$ 132	$ 1077	$ 796
II. BUYING AT THE LOWEST SOUND PRICE						
A. Shift from Non-Competitive to Competitive Procurement	$ 54	$ 30	$ 21	$ 28	$ 79	$ 130
B. Direct Purchase Breakout	10	11	4	4	19	15
C. Mulit-Year Procurement	40	29	20	14	63	100
Total Buying At Lowest Sound Price	$ 104	$ 70	$ 45	$ 46	$ 161	$ 245
III. REDUCING OPERATING COSTS						
A. Terminating Unnecessary Operations	$ 49	(1)$ 7	$ 23	$ 34	$ 64	$ 49
B. Reducing Operating Expense	63	135	117	108	360	147
C. Increasing Efficiency of Operations						
1. Improving Telecommunication Mgt.	13	11	15	14	40	31
2. Improving Transportation & Traffic Mgt.	39	53	57	30	140	73
3. Improving Equip. Maintenance Mgt.	25	32	34	27	93	64
4. Improving Non-Combat Vehicle Mgt.	3	2	2	4	8	6
5. Decreasing Use of Contractor Serv.	1	4	2	1	7	5
6. Improving Military Housing Mgt.	5	5	3	2	10	11
7. Improving Real Property Management	17	14	9	8	31	42
8. Packaging, Preserving & Packing	9	18	10	9	37	18
Total Reducing Operating Costs	$ 224	$ 281	$ 272	$ 237	$ 790	$ 446
IV. MILITARY ASSISTANCE PROGRAM (MAP)						
ISA	$ 9	$ 15	$ 6	$ 8	$ 29	$ 14
Air Force	1	1	1	-	2	1
Total Military Assistance Program	$ 10	$ 16	$ 7	$ 8	$ 31	$ 15
TOTAL PROGRAM	$ 872	$ 1052	$ 584	$ 423	$ 2059	$ 1502
Summary by Major Category						
I. Buying Only What We Need	$ 534	$ 685	$ 260	$ 132	$ 1077	$ 796
II. Buying at the Lowest Sound Price	104	70	45	46	161	245
III. Reducing Operating Costs	224	281	272	237	790	446
IV. Military Assistance Program	10	16	7	8	31	15
TOTAL PROGRAM	$ 872	$ 1052	$ 584	$ 423	$ 2059	$ 1502
Summary by Department/Agency						
Army	$ 224	$ 221	$ 136	$ 105	$ 462	$ 374
Navy	272	318	158	101	577	474
Air Force	332	464	267	192	923	583
DSA	31	33	14	14	61	51
DCA	4	1	3	3	7	6
ISA	9	15	6	8	29	14
TOTAL PROGRAM	$ 872	$ 1052	$ 584	$ 423	$ 2059	$ 1502

(1) Represents the annual rate of savings expected to be realized from FY 1967 decisions to consolidate, reduce or close Defense installations and activities.

SEASONED

TRIP FOR THE WEEKEND

This Executive Cost Reduction Committee at Martin Marietta's Denver Division selects a monthly champion to receive the brass ring in the company's continuing joust with costs. Left to right—Col. D. L. Sanxter, Air Force Plant Representative; William G. Purdy, Executive Director, Technical Operations; and D. S. Burroughs, Executive Director, Management Operations.

Sa-a-y, what about a weekend for two at the Broadmoor in Colorado Springs? Mm-m?

That invitation to leisure is only one of many propositions offered ingenious cost reducers in Martin Marietta's Denver Division. Others include season tickets to games of the Denver Broncos, portable stereo sets, and—as the photos attest—portable TV's.

A joint committee of the division's management and the Air Force Plant Representative's Office selects the "idea of the month" from among five nominated by a Cost Reduction Monitor's Committee. Ingenuity, uniqueness, and impact—as well as dollar value—count in the selection.

One recent winner was Harry C. Bull, tool crib supervisor in the division's manufacturing department. Bull discovered a new tool which permits removal of damaged or dulled blades from the facemill cutter without removing the cutter from the machine.

Another winner was George Batsford, a layout and space planner in the facilities department. Batsford's novel redesign of the layout for overhead cranes in the manufacturing buildings made it unnecessary to extensively relocate and modify existing cranes.

In addition to the monthly prizes, awards on an annual basis will be given by the Denver Division to recognize the departmental manager and the cost reduction coordinator who contribute the most to the plant's Cost Reduction Program throughout the year. These awards will be based on the extent of cost reduction familiarization and promotion within the organization, overall participation, and the quality and quantity of savings ideas generated within the department.

(The photos seem to indicate that—as a pastime—the weekend in Colorado Springs runs a poor second to televiewing.)

You are wrong! The winner of the television set is not the smiling man in the center but the serious fellow partially behind him. Left to right: George Batsford, the award recipient; Richard Weber, Director of Plans and Administration; John Fay, Manager of Facilities—all of Martin Marietta's Denver Division.

→

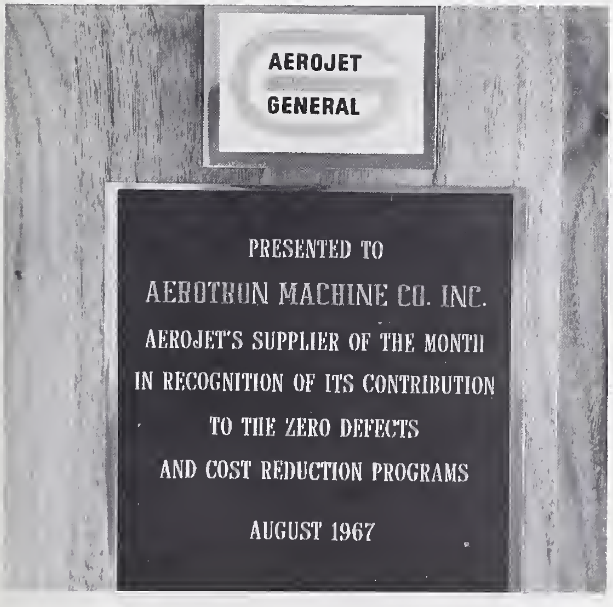
Happy winner Bull receives congratulations of coworkers following award of television set.

INCENTIVES

WOMAN OF THE QUARTER

VIP parking privileges go to lucky members of the 60th Military Airlift Wing, Travis Air Force Base, Calif., whose cost reduction accomplishments are selected for special recognition. Brig. Gen. Maurice F. Casey, Commander, presents the premium parking spaces to the three top contenders in a Cost Reduction Contest conducted each quarter. In addition to the parking space, the winners are designated as "Idea Men of the Quarter." As shown in the photo, one of the recent "Idea Men" happens to be a lady, Mrs. Leota Geotz. General Casey, at left, gets across the point that, after all, it's the idea that counts. Another winner, TSgt Kenneth Fike, looks on. SMSgt P. Cohen, the third Idea Man, was on TDY when the picture was taken.

SUPPLIER OF THE MONTH



PRESENTED TO
AEROTRON MACHINE CO. INC.
AEROJET'S SUPPLIER OF THE MONTH
IN RECOGNITION OF ITS CONTRIBUTION
TO THE ZERO DEFECTS
AND COST REDUCTION PROGRAMS
AUGUST 1967

BOOK OF THE YEAR

"Who's Who" compilations run the gamut from ACTORS to ZEALOTS, even including—believe it or not—Cost Reducers.

McDonnell Aircraft's publication entitled "Who's Who in Cost Reduction" lists employees who distinguish themselves during the year by originating an approved cost reduction. Personnel selected for recogtion receive notice via a letter of appreciation from management.

This exclusive publication was recently dedicated by D. S. Lewis, company president, and is prominently and proudly displayed in reception rooms, lobbies, and other high-visibility points throughout the McDonnell complex.

The photo shows Judith K. Parsons, clerk-typist, and John W. Sneeringer, quality engineer, checking the listings to make sure their names are spelled right.

←

Aerojet General Corp., El Monte, Calif., a participant in the Defense Contractor Cost Reduction Program, awards a plaque each month to its "Supplier of the Month." The following considerations count in selection: cost reduction efforts, attitude and cooperation, delivery and quality, complexity of parts and material, amount of business transacted, and completeness of certifications and documentation.

Photo at left shows typical plaque.

WINDERS PAY SPIN-OFF DIVIDEND

Mrs. Freda K. Bernhard of Melpar, Inc., Falls Church, Va., turned a handy profit for the company when she mounted strips of resistors, capacitors, and diodes between two surplus film-winding devices.

This free-wheeling technique cut inspection time 50 to 80 percent and saved Melpar $8,761 the first year.

Many kinds of small electronic components are procured in long strips wound on reels. Normal practice had been to unwind the strips into a box and then rewind them onto a hand-held reel during the inspection. Frequent entanglements in the rewind process caused inspectors to become unnecessarily wrapped up in their work. The new method, using the film-winding devices, permits easy transfer of the components from one reel to another while testing those in between.

The photo shows Mrs. Bernhard demonstrating her idea.

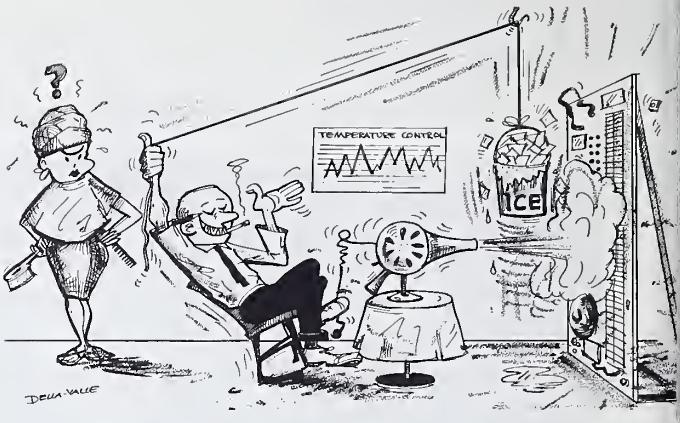
BLOWS HOT AND COLD

It says here that Kai Fong Wong saved Navy $1,800 by aiming a portable hair dryer at pneumatic air conditioning controls in submarines.

This fascinating tidbit is reported by Pearl Harbor Naval Shipyard where Mr. Wong is a Supervisory Marine Engineer.

Puzzled? So was the *Journal*. Then we learned there was no ready way to vary humidity and temperature in a submarine during overhaul. The only way to calibrate the sensitive air conditioning controls, we were told, was to check them over a period of several days as Mother Nature changed atmospheric conditions.

Along came Wong with the right idea: Alternately shoot hot and cold air on thermostats and humidistats to cause wide temperature and humidity variances and—in this way—artificially create the conditions that would shorten calibration time from days to hours. A portable hair dryer seemed the logical air dispenser—for hot air from the heating coils and for cold air when dry ice was placed in front of the blower.



This little beauty aid made calibration more accurate and saved $1,800 in manpower and time.

COLLECTOR'S ITEM

Some people collect coins, others collect stamps, etc. Sergeant First Class Standaert collects egg crates.

Why this strange hobby? Sergeant Standaert is the NCO-in-charge of the Ration Distribution Section, Ft. Knox, Ky. Faced with the responsibility for supplying rations to the heavy influx of units in the field for summer training, he found a problem developing in accumulating enough metal breadboxes to go around. The boxes are used to transport the bread and guarantee its arrival in fresh, uncrushed condition.

Standaert's collection of egg crates provided an ideal substitute for the needed breadboxes. His superiors awarded him $20 for hatching the idea. The troops received their daily bread fresh and unscrambled.

The photo shows Sergeant Standaert behind an egg crate to which his suggestion award certificate and check for $20 is pinned. At left is Mr. Donald Wotring, Chief, Food Processing Branch, and at right is Maj. John T. Moon, Chief, Support Services Division, Logistic Services.

SLUDGE SAMPLING SIMPLIFIED

Here is a breath of clean, fresh air for sludge samplers.

Sludge is that greasy, gooey, gummy gunk which builds up in the bottom of fuel storage tanks from moisture in the air, rust in the tanks, and impurities which settle out of the stored fuel. Tank inspections must be conducted periodically to prevent contamination of fuel used by Air Force aircraft.

Sludge samplers are the unfortunate few who, up to now, have had to don safety breathing devices and descend into the dank and murky depths of the underground fuel tanks to conduct the necessary inspections of sludge buildup.

This old method of inspection was messy and expensive. To prepare for inspection, the fuel in the tanks was pumped as low as possible. The submersible pumps were then removed and all electrical equipment disconnected. All tank inlets and outlets were blocked. The inspectors were lowered into the tanks and samples were taken. If the sludge level was too high the tanks were cleaned; if not, the equipment was reinstalled and the tanks refilled. Cost per inspection: $106.78 per tank.

Now, thanks to Edwin W. Plummer, an Air Force Logistics Command fuel system mechanic at Oklahoma City Air Materiel Area, the difficult and dirty task has been reduced to a simple, sanitary chore. Using Plummer's procedure, the tanks are still pumped as low as possible. Then a slotted can attached to a long aluminum pole is inserted through a 3-inch hatchway. By maneuvering the pole, the inspector drags the can along the bottom of the tank to pick up his sludge samples. The average unit cost of inspection by this method is $5.62 and first-year savings at Tinker AFB were $1,700.

The photo shows idea-man Plummer—now the idol of sludge samplers everywhere—demonstrating his new technique.

COST SAVER Edwin W. Plummer displays his suggestion for sampling sediment in the bottom of fuel storage tanks. A small tin-can section is attached to an aluminum rod. It can be lowered into the thief hole near Plummer's right foot to rake up contaminates for testing. This suggestion saved OCAMA $1,700 per year.

MULTIYEAR BUY TRIMS TANK COSTS

Air Force Logistics Command's Ogden Air Materiel Area in Utah saved $1,244,000 this year in purchasing 370-gallon fuel tanks for F–4 aircraft and will save additional millions in the next 2 years by using multiyear procurement techniques.

Fuel tanks cost $970 each through the usual competitive procurement process.

With large numbers of fuel tanks forecast to meet the needs of the Air Force's growing fleet of F–4's, procurement officers investigated the possibility of combining several years requirements in a single contract. Negotiations with qualified manufacturers on a 3-year multiprocurement basis resulted in lowering the unit cost of the tanks to $779, representing a saving of nearly $200 per tank.

CHILLER

Frozen food cabinets destined for U.S. Armed Forces in Southeast Asia paid off in cold cash recently at the Defense General Supply Center (DGSC) at Richmond, Va., a field activity of the Defense Supply Agency.

When a routine action for 876 of the cabinets came to the desks of Roland Fett and Carl H. Hilgeneck at DGSC, they questioned a specification for stainless steel inner and outer shells for the cabinets.

At this point they called in a value engineering analyst, B. A. Moses, who found that a baked enamel outer and inner shell would be more than adequate for the Army's freezers.

When the Army agreed to the change, baked enamel was substituted for stainless steel at a savings of $264 per unit or a total savings of $231,264.

GOLD STRIKE AT FORT KNOX

John F. Crowe, Jr., chemical equipment repairman at the U.S. Army's Armor Center at Fort Knox, found that not all of the gold is in the local vaults. Crowe created some additional wealth by developing a way to restore unserviceable gas mask carriers to combat condition.

Aware that the M15 gas mask carrier most often wears out around the area which protects the eye lens of the mask, Crowe proposed sewing a heavier material over the worn section and inserting a stiffener to further protect the lens.

The carriers cost the U.S. $2.31. The repairs cost 72 cents. That leaves 159 pennies saved per mask, as enough to total $12,304 in savings for the Army and add up to a $575 suggestion award for Crowe.

Photo shows Crowe holding "before and after" versions.

THREE-PRONGED ATTACK PAYS OFF

The Defense Documentation Center (DDC), a field activity of the Defense Supply Agency has zeroed in on computer operating costs from three different angles. The result? Direct hits producing savings totaling $88,257 for fiscal year 1967 and savings of $71,964 for each of the next 2 years.

The first and most successful target was the maintenance contract covering the Government-owned portion of the computer system. The contract covered three categories of computer maintenance: Basic maintenance, additional maintenance for operational use time in excess of basic coverage, and remedial maintenance. Backed up by the latest GSA schedules, the individual elements of the contract were evaluated and revised so that the additional maintenance charge was eliminated as a separate item and the requirement incorporated in the basic maintenance charge. This change resulted in a 40 percent reduction in the cost of the $175,000 annual contract.

The second action concerned computer tapes. DDC found that it had 150 reels of tape left over from the previous system. New tapes cost around $45 each. By converting the 150 leftover tapes to 550 variable size tapes at a cost of $14 per reel, DDC was able to save $17,050.

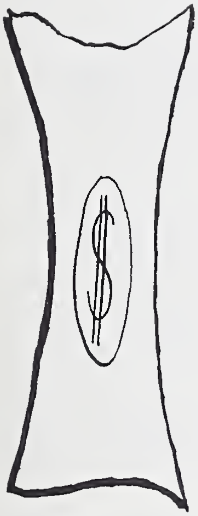
In the third action, DDC determined that a short card feed unit for its card processors was not really essential to the operation. Elimination of rental and maintenance charges for this unit saved $1,427 in fiscal year 1967 and an estimated $2,184 annually for the next 2 years.

MISSILE TRAILERS ADD MUSCLE

Defense Depot Tracy (California) gained $60,000 worth of sorely needed transportation capacity by welding "I"-beam and "X"-beam supports to front and rear axles of 17 excess Army guided missile trailers. The modification, which cost $965, upped gross payload from 3,200 pounds to 45,000 pounds per vehicle, making it unnecessary to buy new trailers to handle the transportation requirement. The trailers are used for intradepot hauling chores, such as dispersing incoming shipments to storage locations, consolidating outgoing shipments, etc.

The photo shows welder Carl Flanery modifying one of the excess trailers.

One of the many functions of the U.S. Department of Agriculture is to help the Department of Defense protect its vast stores of materiel against insect damage.



HOW AGRICULTURE STRETCHES YOUR DEFENSE DOLLAR

By **HAMILTON LAUDANI***

U.S. Department of Agriculture

Lab "Bugs" Bugs

The Stored-Product Insects Research and Development Laboratory at Savannah, Ga.—a unit of the Agricultural Research Service—has extensive experience in solving military insect problems. Since its establishment in 1947, this laboratory has been working with various branches of the Armed Forces and coordinating its military research activities through the Armed Forces Pest Control Board. The entomologists, chemists, and physicists at the Savannah Laboratory specialize in developing methods for protecting against insect damage to subsistence items, clothing, and other military supplies that contain vegetable and animal products.

In the past 20 years, the Savannah laboratory has contributed to the welfare of the GI and to the economy of the Department of Defense with many developments. One example is the insect-resistant multiwall paper bag, which helps keep insects out of flour and other cereal products during storage and transit. Another example is the treatment for protecting woolen cloth and uniforms against clothes moths and carpet beetles, saving the Army over $1 million per year in labor costs alone. A third example is the treatment for protecting subsistence items against insect infestation during storage.

The latest development is the protection of an item which the military personnel neither eat nor wear. As a matter of fact, most military personnel may never come in contact with it though it serves a very important function. However, its usefulness was being affected by what are commonly called carpet beetles.

Hairy Problem

Fibrous cushioning material in rolls, flat sheets, and molded forms is widely used throughout the Air Force for packing delicate instruments and electronic equipment. Animal hair constitutes a very important part of this cushioning material by providing the resiliency so

---

*The author is Director, Stored-Product Insects R&D Laboratory, Stored-Product Insects Research Branch, Market Quality Research Division, Agr. Res. Serv., USDA, Savannah, Georgia.

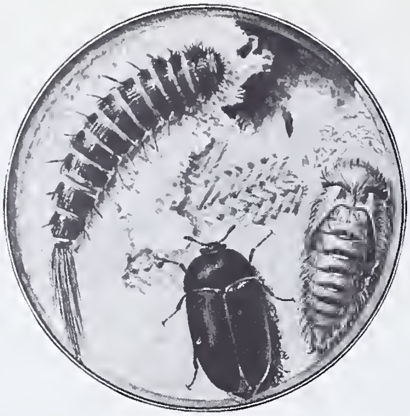


Fig. 1. Black carpet beetle; larva, pupa, and adult.

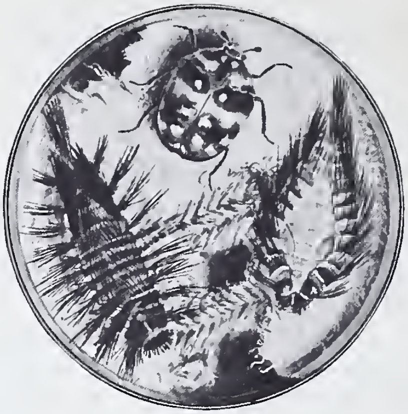


Fig. 2. Furniture carpet beetle: larva, pupa, and adult.

necessary to protect delicate instruments against vibrational and impact shocks during storage, handling, and shipment. According to the packaging engineers, it would be difficult to find a suitable and economical substitute for hair.

To carpet beetle larvae, eating animal hair is like our eating a meal of steak, potatoes, vegetables, ice cream, and milk. It serves them as a complete and well-balanced diet.

Two species of carpet beetles, the black carpet beetle and the furniture carpet beetle, invaded the Air Force warehouses where delicate instruments and electronic equipment are packed and stored. Unnoticed and well protected inside the crates, they led a very happy life, eating, growing, and reproducing. When food got scarce or their quarters became overcrowded, the tiny insects (see figs. 1 and 2) moved into new crates and started new colonies. The infestation became so widespread and the damage to the cushioning material so extensive, it was necessary to routinely open all crates suspected of having damaged cushioning material and repack the supply items before shipment. Equipment in crates with very badly damaged cushioning material had to be sent back to the shop or factory for recalibration.

Burrowing Out

Walter G. Adams, Entomologist, Office of Civil Engineering, Air Force Logistics Command, Wright-Patterson Air Force Base, Ohio, brought the problem to the attention of the Department of Agriculture. The author, accompanied by Mr. Hagen Gillenwater, an entomologist at the Savannah laboratory, met at Robins Air Force Base, Ga., with Mr. Adams and personnel from the various bases that were experiencing trouble with carpet beetles. An inspection of an infested warehouse revealed that the situation was serious and that a three-pronged attack would be required to solve the problem completely:

- First, develop an insect-resistant treatment for the cushioning material. (The use of insect-resistant cushioning material would protect all newly packed and repacked equipment from damage, regardless of whether or not an insect infestation existed.)
- Second, determine how to kill the insects inside the crates with untreated material now in storage to prevent further damage.
- Third, determine how to kill the insects in the warehouses and prevent them from infesting crates with untreated cushioning material.

Fortunately, the Savannah laboratory had already developed a DDT-lindane space treatment for controlling insects in nonsubsistence warehouses (Residual and Aerosols, paragraph 7.9.5.C, AFM 85–7, Military Entomology Operational Handbook). Since this insecticide formulation was already a standard military stock item, the control of the carpet beetles in the warehouses was started immediately.

It was agreed that fumigation of crates in storage to control the insects inside the crates was not economical, practical, or feasible. Extensive, routine fumigation was ruled out because of the high cost for such an operation, interference with the normal activities in the warehouses, and the possible harmful effects the fumigant might have on the equipment. The USDA research activities were, therefore, concentrated on developing the urgently needed effective insect-resistant treatment for the cushioning material that could be applied during or after its manufacture.

DDT—Trials and Vials

Dipping into the reservoir of research knowledge and experience, the entomologists concluded that a DDT treatment was the most promising and that the treatment should be applied to the finished material. A DDT treatment was specified in MIL–C–7769A, dated 17 March 1965, under which the animal hair cushioning material was being procured. However, as written, the specification required the DDT be applied to the animal hair before vulcanization of the binder material. DDT was found ineffective as a protective treatment when so applied. Furthermore, the manufacturers of the cushioning materials refused to apply the DDT in this manner because it interfered with the processing of the product. The finished material when made in this manner would not meet the required performance specifications. A waiver was issued by the Air Force Packaging Agency to omit the DDT treatment requirement.

A DDT formulation was selected, and Roy Bry, the fabric-insect entomologist at the Savannah laboratory, conducted laboratory tests on its effectiveness to protect the finished cushioning material against carpet beetle damage. Simultaneously, Messrs. Bry and Gillenwater investigated methods of applying the solution to the finished cushioning material. It was found that a water emulsifiable concentrate of DDT applied as a spray produced the most desirable results without any harmful effects to the material.

The next step was to conduct mill runs to determine the feasibility of applying such a treatment. Performance and quality evaluation tests with mill-treated cushioning material also had to be conducted to make certain no harmful effects were produced by the treatment. Blocksom & Co., Michigan City, Ind., volunteered to cooperate with us in conducting these tests. This company carried out an extensive series of mill runs with our formulation and found the treatment could be successfully applied commercially to the finished cushioning material.

Chemical analyses and bioassays of the commercially treated cushioning material were conducted by the Savannah laboratory. The tests performed there by Mrs. Margaret Secreast, analytical chemist, and by Mr. Bry made it quite evident that the DDT treatments applied commercially to the finished cushioning material would provide adequate protection against damage by larvae of the black carpet and furniture carpet beetles (see photo).

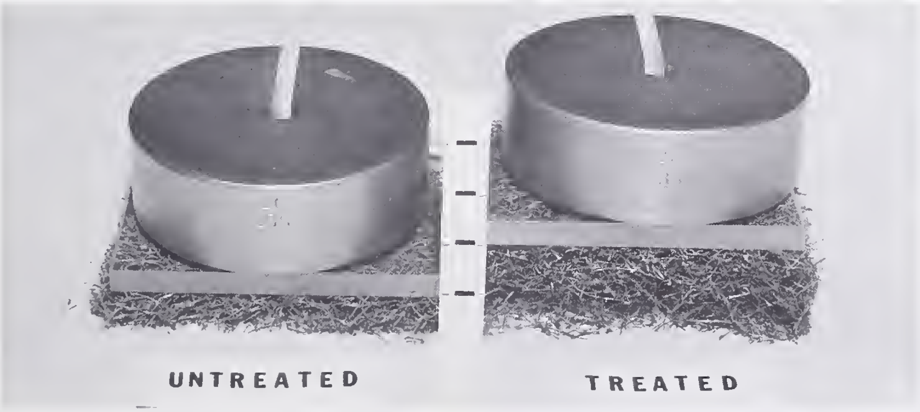
The Air Force already had a fairly large inventory of untreated cushioning material and, undoubtedly, would receive more until the treated product became available. To treat this material, Mr. Gillenwater and the author designed and submitted to the Air Force drawings of a sprayer that could be built and used at the bases where needed.

Committing Insecticide

Based on the above studies, it was recommended to the Air Force Packaging Evaluation Agency, Department of the Air Force, that all animal hair cushioning material be treated after manufacture with an emulsion spray of DDT at a rate to provide a residue of 0.45 percent ±0.10 of DDT by weight of the finished cushioning material. It was further recommended that the Downing and Norton analytical method, as modified by Mrs. Margaret Secreast of the Savannah laboratory, be used as the method for DDT analysis in the revised specifications covering the purchases of treated animal hair cushioning material. Both recommendations were incorporated in the proposed Federal Specification PPP–C–1120, Cushioning Material, Uncompressed Bound Fiber for Packaging, issued by the Headquarters Mobile Air Materiel Area, Department of the Air Force.

The use of treated animal hair cushioning material will virtually eliminate the need of periodically opening, inspecting, and repacking containers. A preliminary review indicates that the initial savings amount to $300,000 with further savings expected. The problem was solved in less than 6 months and at a total cost to the Department of Agriculture of only $2,200.

Quick and effective interagency cooperation not only provided a sizable dollar saving, but also increased the mission effectiveness of our Armed Forces. ☐



Insect Damage Seriously Affects Compression Resistance of Animal Hair Cushioning Materials.—The two sections shown above were cut from the same sheet; that on the left remained untreated and the one on the right was treated with DDT as described in the article. Both samples were exposed to carpet beetle larvae for 4 months. Under a 20-pound weight measure (about 2-pound actual weight), the thickness of the insect-damaged untreated sample was less than one-half that of the insect-resistant treated sample.

UPDATES THE DATING SYSTEM

Nicholas B. Nitti, center, receives the Economy Champions of 1967 folder of letters citing him for his accomplishments from Col. Carl P. Walter, deputy commander of the Ground Electronics Engineering Installation Agency, Griffiss AFB. Nitti's supervisor, John E. Cridland, looks on from the left.

"The horror of that moment," the King went on, "I shall never, never forget!" "You will, though," the Queen said, "If you don't make a memorandum of it." (Alice's Adventures in Wonderland)

It can be expected that Nicholas Nitti, data supply assistant, Air Force Logistics Command, Griffiss AFB, N.Y., must have experienced the frustrations of Alice's King when he discovered that packages of limited shelf life cable blocking compound were marked with "use before" dates only on the *inside* of the box. This made it necessary to open the box to find out if the compound inside was usable. In too many instances it was not, and the compound had to be discarded.

Taking the Queen's advice, Nitti "made a memorandum of it" and sent it forward in the form of a suggestion that all packages have the "use before" dates stamped on the *outside* so that the issue of packages could be better controlled and the need to discard outdated compound eliminated.

Nitti was selected as an Economy Champion for 1967 and received special citations from President Johnson and John W. Macy, Jr., chairman of the Civil Service Commission for this $14,100 savings idea.

IT'S IN THE BAG

What would you do with some 2 million yards of coated duck fabric? Brilliant chartreuse, yet!

The Defense Supply Agency inherited that colorful little eye tickler from a military department when it entered the inventory management business. The duck, once destined to line Quonset huts, now was excess. To DSA's chagrin, no one seemed to want it. Disposal for the usual fractional return on the dollar appeared to be the only out.

Then along came George Stein, (photo) of DSA's Defense Personnel Support Center in Philadelphia, who glimpsed a silver lining in Air Force's order for 35,487 flight bags. Stein's song was that the excess duck would make great external bag material when reprocessed to Air Force color specifications. Moreover, said Stein, the unretouched chartreuse duck would make ideal lining for the bags—something to brighten the user's day. The Air Force gave Stein's idea the green light when shown it would save $3.34 per bag. The total bill will be $373,916 less than anticipated when 41,829 bags for fiscal year 1968 and 34,635 bags for fiscal year 1969 are added to the fiscal year 1967 quantity.

What? You say you prefer mauve.

SKIRTS PROBLEM, SOLVES IT

The ingenuity of Robert W. Wilson, 4756th Field Maintenance Squadron fabrication branch sheet metal shop, Tyndall AFB, Fla., saved Air Training Command $3,000. Wilson's suggestion was to repair air conditioner AC input cables, aerospace ground equipment, and 440-volt 100-foot extension cables by attaching molded fiberglass skirts in place of the rubber shield used as a safety device at the input ends of each cable.

Since there was no way of remolding any of the rubber parts when the rubber shield became damaged or worn, the entire cable assembly had to be replaced. The cost of a new cable was $350, compared with a cost of only $10 to modify the cable. The $3,000 saving is based on the modification of nine cables. The modification using the fiberglass skirt is also more durable and easier to install or replace.

YOU MEAN IT'S NOT GREEN CHEESE?

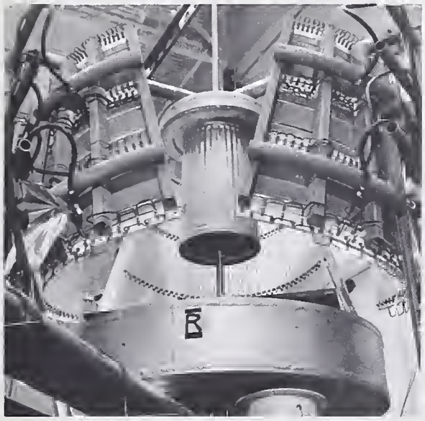
Five-dollar trash cans are standins for $15,000 components when TRW Systems of Redondo Beach, Calif., checks out the instrumentation and hydraulic system of the Apollo Lunar Excursion Module.

The skirt of the module's engine is designed to collapse for lunar touchdowns on rough terrain. An overly rigid skirt could shove the descent engine into the cockpit—a most unhappy circumstance.

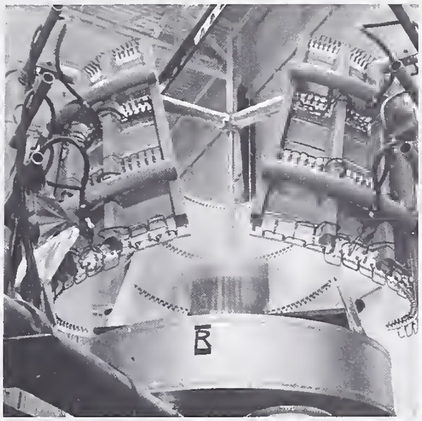
TRW Systems engineers found that the every-day trash can had stiffness characteristics of the $15,000 skirt and would satisfy the earthly requirements for tests and checkouts.

Savings ran $60,000.

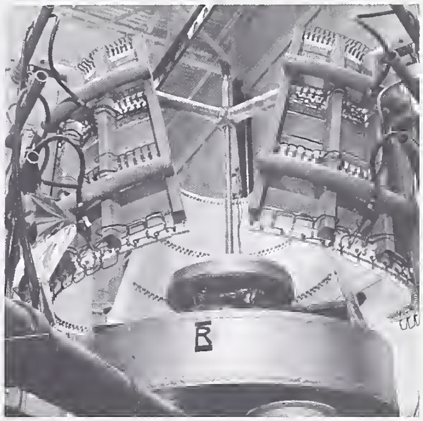
GOING



GOING



GONE



MORE BEDS PER BOX NO BUNK

Hugh Perkins and Charles Boyd, warehouse foremen at Defense Depot, Tracy, Calif., reasoned that a requisition for 22,997 bunk beds and the urgency for quick shipment of the order to Southeast Asia justified taking another look at military packing specifications. Applicable specifications state that the beds should be packed two per wooden container. Perkins and Boyd felt that, in this particular instance, the interests of DSA and the Defense Department could be served best by packing more beds in a single box. They submitted their proposal to their superiors who saw the wisdom of their idea and promptly approved the plan.

The order was processed by putting 10 beds in each box thereby saving 9,180 boxes plus packing material, labor costs, and shipping and loading operations. This change saved $121,657.

AUTOMATED HEAT

Aerojet General's Von Karman Center at Azusa, Calif., saved salaries and overhead on four stationary engineers when fully automated steam generators replaced manually run boilers for piping heat plantwide.

The law required manning each of the four old high pressure boilers 24 hours a day, 7 days a week. The new system does not need personal attention.

PAPERWORK CUT 90 PERCENT

Mr. Clell R. Mears, Management Analyst at Ireland Army Hospital, Ft. Knox, Ky., shows LTC E. C. Campbell, Chief Management Services Division, the new form he developed for recording military labor utilization. Mear's idea brought him $775 and is expected to save nearly $24,500 during its first year of use. The new form does the same job as seven of the old type. In addition to the savings in material, the form will also save time and file space.

ALL-STAR IN THE SUGGESTION LEAGUE

Thirty-game winners are just as rare in the Suggestion League as in baseball which makes Edward F. O'Reilly of the Receiving Department, U.S. Naval Supply Center, Charleston, S.C., some kind of champ. He recently submitted his 39th beneficial suggestion. O'Reilly's latest idea—begorrah—eliminated labor time and extra materials cost by substituting metal containers obtained from the Fleet Ballistic Missile Sites for handmade, disposable wooden boxes in which to overpack liquids packaged in glass for shipment. The metal containers could be used over and over again, and were acquired at no cost. Savings came to $2,878.

Batter up!

OPEN AND SHUT CASE

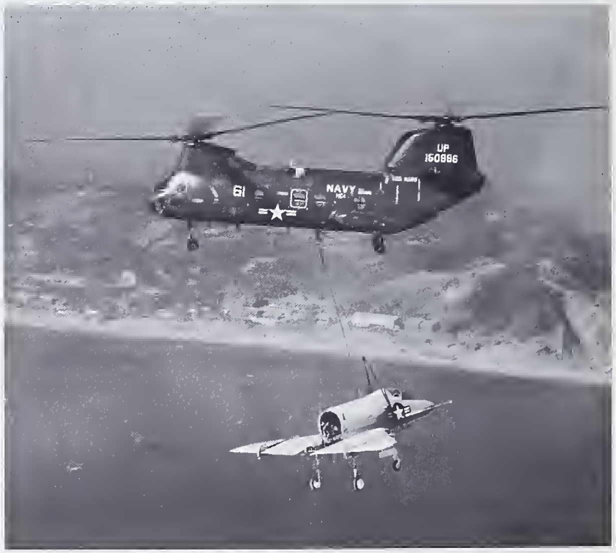
Doorless doorways led to a problem at the U.S. Naval Station, Washington, D.C., where most buildings have metal partitions, and where the changing missions of occupying activities made doors a virtual necessity in many locations.

Installation was a costly proposition because some metal panels had to be dismantled and altered to receive the metal frames and doors. Average cost was $247 per door.

David T. Brooke, a planner and estimator for the Public Works Department, called on his previous experience in the construction field and developed a grooved or rabbeted wood door jamb that is easily fabricated and attached to the ends of metal partitions without changing or replacing any of the existing panels. Cost to install doors has dropped to $82 per unit.

In the candid photo below, Brooke—in doorway—shows William M. Keller, Maintenance Control Division Head, how the rabbeted door jamb fits neatly into the metal partition.

CHOPPERS RAISE REPAIR OUTPUT



About 15 minutes flight time is all it takes for this HC–1 helicopter to airlift this front half of an A–4 "Skyhawk" between NAS Atsugi (Japan) and the Nippi repair plant at Sugita. The helo-lift program replaces the former ferry system which usually took about 16 days. The helo-lift has contributed 1,080 more working days to the "Skyhawk" operational schedule this year.

Navy used H–46 "choppers" from Helicopter Combat Support Squadron One Detachment Atsugi to move A–4 aircraft ("Skyhawks") the 16 miles between the Naval Air Station, Atsugi and the Japan Aircraft Co. (Nippi) plant at Sugita which performs major aircraft repairs. This helo-lift shaved 16 days from the time-out-of-service for each Skyhawk.

Under the old system, it took about 4 days for contractor personnel at the Nippi plant to completely assemble the aircraft at Sugita and check its flight readiness. The aircraft were then barged to Kisarazu where military personnel trimmed the engine at high power and performed the necessary checks and inspections to prepare the aircraft for flight. From there, ferry pilots flew the aircraft to Atsugi for major inspection.

Use of helicopters eliminates the need to completely assemble, function check, barge, reinspect, and fly the aircraft to Atsugi. Moving the planes by helicopters direct to Atsugi eliminates all work formerly done by military personnel at Kisarazu. While still disassembled in two major sections, the A–4's are airlifted to Atsugi in only 15 minutes.

The A–4, known as the "vest pocket bomber," costs the Navy $317.56 for each day out of service. By contributing 1,080 more working days to the "Skyhawk" schedule this year, the Navy figures the helo-lift program has generated intangible savings of $342,965.

In addition to the time-saving feature the helo-lift program has made a substantial reduction in repair costs. When factors such as the cost of moving the A–4's by barge ($10,260 a year), the contracted man-hours saved ($24,408 each year), and the cost of fuel are considered, the actual out-of-pocket savings total up to $39,479.

The Navy credits the idea to Lt. Cmdr. Morris K. Terry who studied the helo-lift potential and then initiated and coordinated all actions necessary to get the show on the road. Terry was recently cited by Rear Adm. Marshall W. White, Commander, Fleet Air Western Pacific for his contribution to more effective aircraft maintenance and the Navy Cost Reduction Program.

DAM SITE BETTER

Obviously, amphibious vehicles check out as well in water 15 miles distant as in water 125 miles away. The trick is to find the nearest usable puddle—and that is precisely what E. L. Uhl, Jr., an employee of Yuma Proving Ground, Ariz., set out to do.

For some time, testing of amphibious vehicles had been conducted at Black Meadow Landing, Calif., on Lake Havasu 125 miles away. The trip to the lake took the time of six to 10 people and three to five support vehicles. The tests lasted anywhere from 5 to 60 days. All this plus the need to pay a standby mechanic and to take along needed repair parts left much to be desired.

Uhl's idea was to get in touch with the Bureau of Reclamation, Department of the Interior, to see if any newly developed areas closer to the home station could be used for the tests.

A team made up of W. C. Christopher, E. J. Sefcah, and W. L. Snider from Yuma investigated possible test sites. They succeeded in locating a suitable spot at Senator Wash Dam, only 15 miles from the Proving Ground. With Department of the Interior approval, tests are now conducted at the new location.

Savings for fiscal year 1967 came to $34,890. Almost half of the savings resulted from ready access to mechanics and technicians; the rest came from reductions in time, test crew, and vehicles.

FLATCAR UNLOADING UPLIFTED

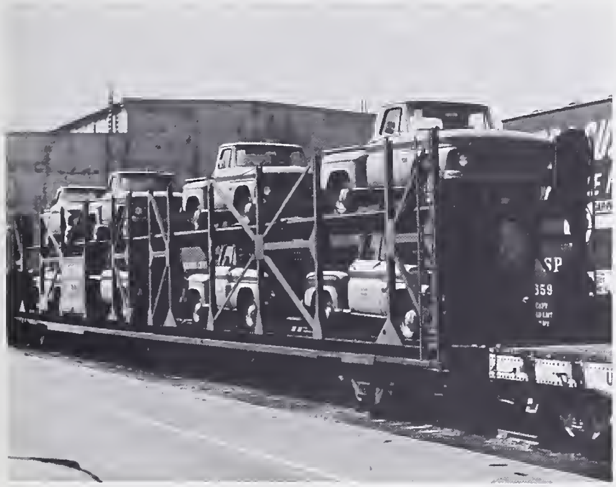
Unloading vehicles from bilevel railroad cars has its up and downs—in technique as well as function.

The cumbersome old unloading procedure at the Naval Supply Depot in Seattle, Wash., was to roll the lower-level vehicles onto a separate flatcar and then use a crane to lift vehicles to the ground from both top and bottom levels.

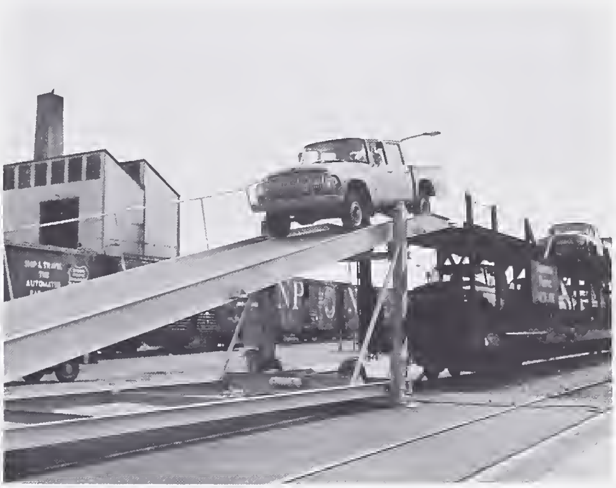
Now the vehicles simply roll down a portable ramp that is adjustable to various heights. The new method eliminates cranes, crane operators, and extra flatcars for savings of $5,000 a year.

Photo at left shows the problems; the one at right, the solution.

The Problem



The Solution



NIKE–X PULVERIZES VE TARGET

Steve Zelobowski, value engineer manager for the Nike-X Project Office at Army Missile Command's Redstone Arsenal, Ala., is as proud as a new papa over the $8.5 million saved last year from intensified value engineering efforts by all Nike-X participants, both Government and industry.

At a recent meeting of Nike-X VE-types from all parts of the country, Steve happily announced that last year's results exceeded their assigned goal of $5 million by a whopping 70 percent. Among the visitors reviewing accomplishments and making VE plans for the future were: Paul Dobrow, value engineering expert from Office Chief of Research and Development, Department of Army; Brig. Gen. I. O. Drewry, Nike-X Project Manager; Col. J. T. Prendergast, chief of Nike-X Research, Development, Test and Evaluation Directorate; R. M. Bailey, chief of the Project's Development Engineering Division; and John Nordahl of Bell Telephone Laboratories, chief value engineer for the Nike-X contractor organization.

General Drewry told those assembled that the presence of a value engineering organization working on a day-to-day basis in contractor plants was a major factor in the success of the program.

CARDS REPLACE GUARDS

Automation has taken over the security guard detail at the Satellite Communications Ground Terminal, Camp Roberts, Calif.

The installation of an automatic gate opener and card control device activated by special identification cards permitted the activity to cancel its civilian guard contract. The terminal reports there has been no lowering of security standards and the uncertainties inherent in human frailties, such as sickness and failure to report for duty, have been eliminated. So has overtime pay.

The civilian guard contract used to cost $17,820 per year. Reducing first year gross savings by the one-time cost of the automated equipment leaves $12,145 in net savings for fiscal year 1967. The full amount of $17,820 per year will be realized as savings in fiscal years 1968 and 1969.

PERMANENT FIXTURE

AMH–1, Edward E. Doty's new invention seems destined to become a permanent fixture at all naval aircraft maintenance facilities. Doty's $10 Universal Flight Controls Holding and Testing Fixture replaces seven separate devices costing $6,500 and cuts repair and test time on activators from 13 days to 1. His installation, U.S. Naval Air Station, Sanford, Fla., gave him two awards totaling $450 for the idea.

The station's hydraulic shop had been using different fixtures to test the various types of activators in the RA–5C "Vigilante" system. Annoyed by this time-consuming shuffling of fixtures, Doty studied the particulars of each activator and designed a single fixture for testing, checking, and repairing all activators. Using the universal fixture along with a high-speed timer and a 4-inch dial indicator gives the shops greater repair capability. Besides savings of $6,500, so far, downtime on the Vigilantes has been reduced and the need to send some units to other stations for special tests has been eliminated.

Doty believes his fixture can also be used on aircraft like the F4B "Phantom II", the A6A "Intruder," and the F8U "Crusader." Naval Air Systems Command Headquarters hopes to prove the usefulness of the fixture on other aircraft and has directed Naval Air Systems Command Representative Atlantic rework facilities to investigate the item for possible use at two other activities.

The photo shows AMH–1 Doty using his fixture to run a test on an aircraft control component.

NO CLOSE-UPS FOR THIS SUBJECT

No one likes to "watch the birdie" through the white hot intensity of missile firings and special tests at White Sands Missile Range in New Mexico. That was why normal practice called for trip wires over safe distances to trigger cameras for pix of the action.

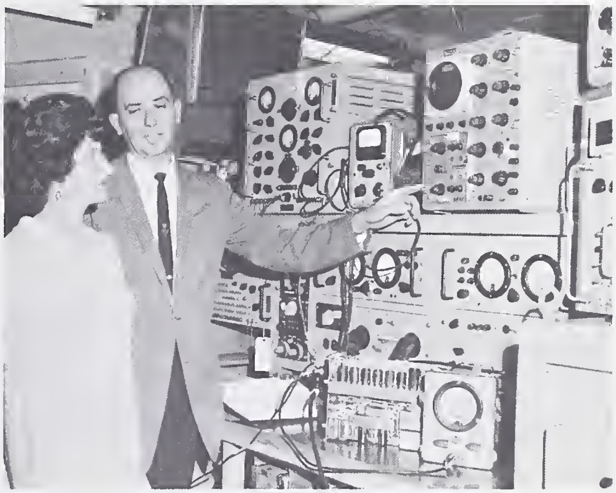
However, normal practice went out in a flash when a bright-eyed slide-rule jockey at Dynalectron Corp. calculated that trip wire for each of the five projects the company had to cover photographically would extend 20 miles on average. The safe, economic substitute for this 100 miles of wire turned out to be a radio remote control unit and transmitting equipment to switch the cameras on and off.

This lights-camera-action bit saved $1,484 in fiscal year 1967.

EXCESS STOPS $3 MILLION PURCHASE

Two F–106 fire control system mockups needed by Air Force's Air Defense Command were constructed by modifying and updating 16 obsolete test consoles. The mockups, consisting of eight consoles each, are used to check the MA–1 aircraft and weapon control interceptor system on the F–106. The mockups electrically simulate the aircraft to permit checkout of the MA–1 unit before actual installation.

The Air Force Logistics Command employees at San Antonio Air Materiel Area who unearthed the excess consoles and foresaw their adaptability to new uses were Jimmie S. Holman, an equipment specialist, and Dorothy James, an inventory manager (see photo). Their resourcefulness saved the Air Force $3,381,861 by precluding the need to buy new equipment.



PROJECT USE

Skull sessions to find new uses for excess items are the forte of this four-man team at the Army Tank Automative Command in Warren, Mich. They are (left to right): automotive equipment and maintenance specialist William Taylor, Office Chief Wayne Wood, supply expert Charles Beabes, and engineer Leo Silver.

"USE" is ATAC's acronym for "Utilization of Serviceable Excess." The Project USE Office at ATAC is said to be a unique team approach to imaginative reapplication of excess items. Some results:

- Canvas covers for the obsolete M110 trailer were modified for use with the M332 ammunition trailer, saving $20,000 in fiscal year 1967.
- Heater kits excess to one class of vehicles were modified to fit another class, saving $75,000 in fiscal year 1967.
- Two types of excess winterization kits were cannibalized to make up 100 kits for a third type of vehicle, saving $13,900 in fiscal year 1967.

AIR FORCE LOGISTICS SYSTEMS CENTER ACTIVATED

An Advanced Logistics Systems Center, a new Air Force Logistics Command operating agency designed to develop logistics systems for the future, was activated on October 1 at Wright-Patterson Air Force Base, Ohio.

Consolidating several existing logistics functions, the new organization is designed to improve future AFLC capabilities in communications, data processing, and materiel management. In addition, the center will design and develop less costly logistics systems for improved support to the field.

Brig. Gen. Frederick E. Morris, Jr., formerly comptroller for the Air Force Logistics Command since January 1965, heads the center. Personnel are drawn from current AFLC resources, with no reduction or increase of civilian positions or change to the military-civilian personnel mix. The center employs 108 military and 819 civilian employees. Facility requirements are provided from existing Wright-Patterson resources.

The new center will improve support performance in procuring, storing, distributing, transporting, and repairing some one million different items valued at approximately $10 billion and used by Air Force units throughout the world. For example, the systems of the future will provide more detailed and more current information in such areas as delivery schedules of items being bought, equipment repair schedules, frequency of replacement, condition and quantity in stock, and quantity en route in transportation systems. Such improved visibility of worldwide assets and the ability to respond promptly and accurately to problems as they arise will result in reduced costs of inventories and operations.

TRAMP, TRAMP, TRAMP—BR-R-R

No one gets cold feet in this man's Army if SPC E7 Jackie Hefner has anything to say about it—and he does.

Hefner operates out of Ft. Richardson, Alaska, where, now and then, he tests thermal boots for insulation leakage—a sole-chilling catastrophe in Arctic climes.

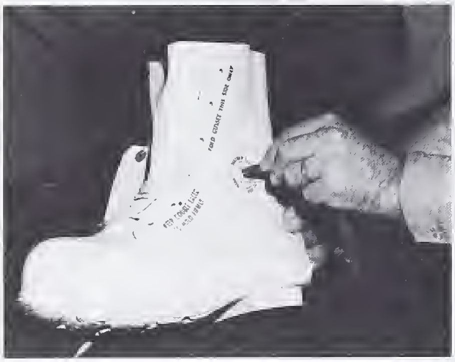
Every thermal boot has a once-a-year checkout, ordinarily before winter sets in. The check consists of blowing air via the boot's pressure valve into its sealed insulated space and then immersing the boot in water to catch any incipient bubbles—like a garage man testing for tire leaks. The Army's special device for performing the test has the unimaginative name: *Leak Test Unit for Insulated Boots, Model T60–1.*

Testing procedure called for opening the boot's screw type valve by hand, fitting the adapter on the valve stem, inflating the boot's insulation space to required air pressure level, and then removing the adapter. (Photo at left.) The tricky part was to remove the adapter without losing air in the process. A boot inflated to less than the prescribed pressure has to be retested.

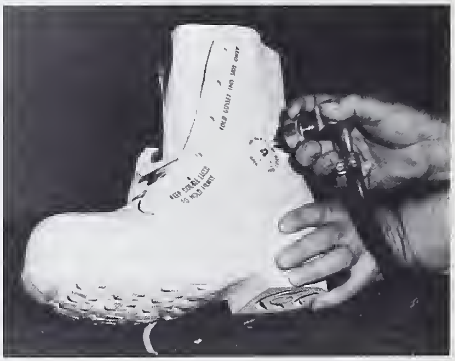
Hefner (inset photo) plugged air leaks with his idea for fitting a rubber tubing (instead of the Leak Test Unit's adapter) over the boot's valve stem, blowing air through the tubing, and pinching the tubing closed when removing the air pump. No air escapes and the correct pressure is achieved the first time. (Photo at right.)

Hefner's idea reduced testing time enough to save the Army $3,332 last year.

BEFORE



AFTER



MAN WITH A MISSION

Sometimes a newcomer to the Cost Reduction Program can take a hard look at his operation and find ways to save Government money without a lot of indoctrination and training.

That's what James E. McCorkle, Jr., did in Denver. Mr. McCorkle is Chief of the Denver, Colo., Civil Defense Regional Facility of the Army Strategic Communications Command—CONUS.

When he got the word to "get with the program" from the commander of USASTRATCOM–CONUS, Mr. McCorkle swung into action without experience in formal cost reduction procedures.

Here are some of the management actions he came up with.

A saving of $453.90 was racked up by eliminating travel of a member of his Denver staff through six States to inventory radio equipment. The inventory was assigned to State Communications Officers in nearby locations. Maintenance personnel were assigned to inventory antenna spare parts during normal preventive maintenance trips. This eliminated the need for a member of Mr. McCorkle's staff to visit each state in the region for this special inventory. Savings: $454.

Mr. McCorkle used engineering know-how to eliminate the need for a spare cable within the operating cable trench for coaxial leads to the transmitter site in Brighton, Colo.

A plastic pipe was buried with a coaxial cable inside. A pull wire was inserted in the plastic pipe to permit pulling another cable through the pipe in case future expansion of the antenna system is needed. The plastic pipe provides easier access for repairs of the coaxial cable. Savings: $502.50.

Mr. McCorkle managed to eliminate the need for a Quonset-type building that had been planned to house a generator. Mr. McCorkle simply procured a generator that was provided by the vendor with a protective metal all-weather housing. Savings: $2,000.

Every one of the cost reductions mentioned was validated and he is the top man in USASTRATCOM–CONUS in cost reduction contributions.

Col. W. A. Van Sandt, the Commanding Officer, USASTRATCOM–CONUS, in presenting a Certificate for Outstanding Contribution to the Cost Reduction Program to Mr. McCorkle, said: "Your numerous contributions to the Command's Cost Reduction Program have helped USASTRATCOM accomplish its goal as surely as any single larger accomplishment."

U.S. GOVERNMENT PRINTING OFFICE: 1967 O—279-135

YA-HOO! MOUNTAIN DEW!

Take a 5-gallon carboy, put it on an electric hotplate, insert a copper coil in the top of the big jug, and immerse the lower end of the coil in a plastic wastebasket full of ice, and guess what you have? That's right, a mighty efficient little still.

Where is this moonshine mechanism located? You'd never guess. It's smack in the middle of the Army's Aerobiology and Evaluation Laboratory at Ft. Detrick, Md. But don't call the "revenooers"! That ain't "corn squeezins" dripping from coil to jug. It's clear, pure freon.

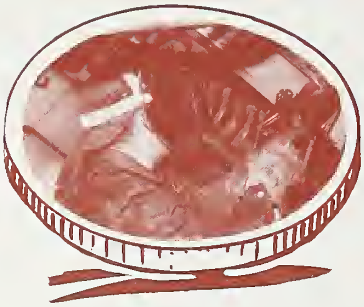
The laboratory needed 70 gallons of freon for field tests of a research project. Since new freon was costly and not immediately available, the laboratory decided to distill the "good stuff" from greasy, contaminated freon left over from previous tests.

This "Roaring Twenties" idea saved the Army $500. The only expense was $12.84 for the ice.

Readers thirsting for cost reduction knowhow are advised to restrict use of the apparatus to contaminated freon—else Elliot Ness will get you!

UNIVERSITY OF FLORIDA
3 1262 09304 8147

FLARE



(Page 50)

(Page 48)

(Page 48)

(Page 12)

(Page 56)

(Page 60)

(Page 49)

(Page 12)

(Page 58)